Author Index to Volumes 31 and 32

Please note that A refers to Volume 31 and B refers to Volume 32

Abbott, T. P. See Slininger, P. J., 759A
Adami, A.
—; Cavazzoni, V.; Trezzi, M.; Craveri, R.: Cellobiose Hydrolysis by *Trichosporon pullulans* Cells Immobilized in Calcium Alginate, 391B(C)
Adams, H. L.
—; Thomas, C. R.: The Use of Image Analysis for Morphological Measurements on Filamentous Microorganisms, 707B(C)
Adema, E. See Glacken, M. W., 491B
Agrawal, P. See Veeramallu, U., 770A
Aguilera, A.
—; Benítez, T.: Relationship between Growth, Fermentation, and Respiration Rates in *Saccharomyces cerevisiae*: A Study Based on the Analysis of the Yield Y_{px}, 240B(C)
Akrida-Demertzi, K.
—; Demertzis, P.; Koutinas, A. A.: pH and Trace-Elements Content in Raisin Extract Industrial-Scale Alcoholic Fermentation, 666A
Alary, J. F. See Beaubien, A., 105B
Alberghina, L. See Porro, D., 411B
Alfonsel, M. See Martín, C., 341B
Almond, E. L. See Miller, J. F., 407A
Alonso, A. See Pascual, C., 374B
Ampon, K.
—; Means, G. E.: Immobilization of Proteins on Organic Polymer Beads, 689B
Ando, S.
—; Kakimoto, T.; Itoh, K.; Arai, I.; Kiyoto, K.; Hanai, S.: Increased Digestibility of Cedar by Pretreatment with Peracetic Acid and Steam Explosion, 802A
Andreu, G.
—; Benaiges, M. D.; López, J.; Solà, C.: A Simple Method for RNA Extraction from Yeasts, 927B(C)
Andrews, G.
—; Darroch, M.; Hansson, T.: Bacterial Removal of Pyrite from Concentrated Coal Slurries, 813B
Andrews, G. F.
The Selective Adsorption of *Thiobacilli* to Dislocation Sites on Pyrite Surfaces, 378A(C)
Arai, I. See Ando, S., 802A
Archer, D. B. See Hilton, M. G., 885A(C)
Arnold, E. See Gibbons, W. R., 696A
Arnold, R. G.
—; DiChristina, T. J.; Hoffmann, M. R.: Reductive Dissolution of Fe(III) Oxides by *Pseudomonas* sp. 200, 1081B
Arve, B. H.
—; Liapis, A. I.: Biospecific Adsorption in Fixed and Periodic Countercurrent Beds, 616B
—; Liapis, A. I.: Modeling and Analysis of Elution Stage of Biospecific Adsorption in Finite Bath, 240A
Asenjo, J. A. See Hunter, J. B., 929A; Liu, L.-C., 1113B

Backer, M. P.
—; Metzger, L. S.; Slaber, P. L.; Nevitt, K. L.; Boder, G. B.: Large-Scale Production of Monoclonal Antibodies in Suspension Culture, 993B
Baddour, R. F. See Ho, C. S., 8B; Ju, L.-K., 995A
Baeza, J. See Durán, N., 215A, 564B(C)
Bailey, J. E. See Peretti, S. W., 418B; Seo, J-H., 725B(C); Seressiotis, A., 587A; Vanni Shanks, J., 1138B; Wittrup, K. D., 304A
Baird, M. H. I. See Tsezos, M., 545B
Baker, F. L. See Krull, L. H., 321A
Baker, J. See Chum, H. L., 643A
Baltzis, B. C.
—; Fredrickson, A. G.: Limitation of Growth Rate by Two Complementary Nutrients: Some Elementary but Neglected Considerations, 75A
Banerjee, M.
—; Debnath, S.; Majumdar, S. K.: Production of Alcohol from Starch by Direct Fermentation, 831B(C)
Barngrover, D. See Sardonini, C. A., 1073B(C)
Bar, R.
Ultrasound Enhanced Bioprocesses: Cholesterol Oxidation by *Rhodococcus erythropolis*, 655B
Barragan, B. B. See Viera, F. B., 711A
Bastin, G. See Renard, P., 287A
Batsalova, K. See Kozhukharova, A., 245B(C)
Baugh, K. D.
—; Levy, J. A.; McCarty, P. L.: Thermochemical Pretreatment of Lignocellulose to Enhance Methane Fermentation: II. Evaluation and Application of Pretreatment Model, 62A
—; McCarty, P. L.: Thermochemical Pretreatment of Lignocellulose to Enhance Methane Fermentation: I. Monosaccharide and Furfurals Hydrothermal Decomposition and Product Formation Rates, 50A
Beaubien, A.
—; Jolicoeur, C.; Alary, J. F.: Automated High Sensitivity Gas Metering System for Biological Processes, 105B
Becker, T. C. See Suh, D. H., 821B(C)
Beeftink, H. H. See Van Den Heuvel, J. C., 718A
Beldman, G.
—; Voragen, A. G. J.; Rombouts, F. M.; Pilnik, W.: Synergism in Cellulose Hydrolysis by Endoglucanases and Exoglucanases Purified from *Trichoderma viride*, 173A(C)
—; Voragen, A. G. J.; Rombouts, F. M.; Searle-van Leeuwen, M. F.; Pilnik, W.: Specific and Nonspecific Glucanases from *Trichoderma viride*, 160A
Belikov, V. M. See Gololobov, M. Yu., 866B
Beltrame, P.
—; Beltrame, P. L.; Carniti, P.; Guardione, D.; Lanzetta, C.: Inhibiting Action of Chlorophenols on Biodegradation of Phenol and Its Correlation with Structural Properties of Inhibitors, 821A
Beltrame, P. L. See Beltrame, P., 821A
Benaiges, M. D. See Andreu, G., 927B(C)
Ben-Bassat, A. See Inlow, D., 227B
Benefield L. D. See Nicol, J., 682A
Benemann, J. R. See Weissman, J. C., 336A
Beneš, V. See Linek, V., 482B
Benítez, T. See Aguilera, A., 240B(C)
Bensoussan, M. See Gervais, P., 457A
Bentham, A. C.
—; Ireton, M. J.; Hoare, M.; Dunnill, P.: Protein Precipitate Recovery Using Microporous Membranes, 984A
Berke, W.
—; Schüz, H.-J.; Wandrey, C.; Morr, M.; Denda, G.; Kula, M.-R.: Continuous Regeneration of ATP in Enzyme Membrane Reactor for Enzymatic Syntheses, 130B
Bernard, A. See Tapie, P., 873B
Bernier, Jr., R. See Paice, M. G., 235B(C)
Bes, B. C. M. See Giuseppin, M. L. F., 577B
Bezenger, M.-C.
—; Navarro, J.: Alcoholic Fermentation: Model Accounting for Initial Nitrogen Influence, 747A(C)
Biswas, S. R.
—; Mishra, A. K.; Nanda, G.: Xylanase and β-Xylosidase Production by *Aspergillus ochraceus* during Growth on Lignocelluloses, 613A(C)
Black, S. See Chum, H. L., 643A
Blanch, H. W. See Roffler, S. R., 135A, 192B
Boag, I. F. See Dawson, M. W., 220B
Boder, G. B. See Backer, M. P., 993B
Bogaert, N. See Monzambe, K. M., 659A
Borisov, I. L. See Gololobov, M. Yu., 866B
Bothast, R. J. See Slininger, P. J., 1104B
Bourdillon, C.
—; Lortie, R.; Laval, J. M.: Gluconic Acid Production by an Immobilized Glucose Oxidase Reactor with Electrochemical Regeneration of an Artificial Electron Acceptor, 553A
Bree, M. A.
—; Dhurjati, P.; Geoghegan, R. F.; Robnett, B.: Kinetic Modelling of Hybridoma Cell Growth and Immunoglobulin Production in a Large-Scale Suspension Culture, 1067B(C)
Bressollier, Ph.
—; Petit, J. M.; Julien, R.: Enzyme Hydrolysis of Plasma Proteins in a CSTR Ultrafiltration Reactor: Performances and Modeling, 650A
Brooks, J. D. See Dawson, M. W., 220B
Brumm, P. J.
Fermentation of Single and Mixed Substrates by the Parent and an Acid-Tolerant, Mutant Strain of *Clostridium Thermoaceticum*, 444B
Buchacher, A. See Jungbauer, A., 326B
Buckland, B. C.
—; Gbewonyo, K.; DiMasi, D.; Hunt, G.; Westerfield, G.; Nienow, A.: Improved Performance in Viscous Mycelial Fermentations by Agitator Retrofitting, 737A
Bühler, H. See Monzambe, K. M., 659A
Buléon, A. See Colonna, P., 895A
Burdick, B. A.
—; Schaeffer, J. R.: Production of Specialty Chemicals Using Immobilized Whole Cells in Spiral-Wound Bioreactors: I. Aspartic Acid and Alanine Production Using Cells Immobilized in Gelatin on Nylon Mesh, 390A(C)
Busto, B. L. See Viera, F. B., 711A

Cadman, T. W. See Yoo, Y. J., 357A, 426A
Campos, V. See Durán, N., 215A, 564B(C)
Canovas-Diaz, M.
—; Howell, J. A.: Stratified Mixed-Culture Biofilm Model for Anaerobic Digestion, 348B
Cardello, R. J.
—; San, K.-Y.: The Design of Controllers for Batch Bioreactors, 519B
Carlson, J. D. See Tompkins, R. G., 11A
Carniti, P. See Beltrame, P., 821A
Carpentier, R.
—; LeBlanc, R. M.; Mimeault, M.: Monitoring Electron Transfer by Photoacoustic Spectroscopy in Native and Immobilized Thylakoid Membranes, 64B
Carter, E. A. See Tompkins, R. G., 11A
Cavazzoni, V. See Adami, A., 391B(C)

Cazzador, L.
On the Optimal Control of Fed-Batch Reactors with Substrate-Inhibited Kinetics, 670A
Ceen, E. G.
—; Dunnill, P.; Herrmann, J. P. R.: Two-Liquid Phase Reactor Studies of 11α-Hydroxylation of Progesterone by *Aspergillus ochraceus*, 743A
Chang, C.-C. See Hsieh, J.-H., 334B
Chang, C. E.
Continuous Fractionation of Human Plasma Proteins by Precipitation from the Suspension of the Recycling Stream, 841A
Chang, H. N. See Chung, B. H., 205B
Chang, T. M. S. See Daka, J. N., 213B; Gu, K. F., 363B
Chang, Y. K.
—; Pyun, Y. R.; Lim, H. C.: Adaptive Optimization of a Continuous Culture with the Use of a Bilevel Forgetting Factor, 944A
Chattaway, T.
—; Goma, G.; Renaud, P.-Y.: Modeling Ethanol and Secondary Inhibitions of Ethanol Fermentation in a Multistage Reactor, 271B
Chau, P. C. See Glassy, M. C., 1015B
Chereau, D. See Durand, A., 476A
Cherry, R. S.
—; Papoutsakis, E. T.: Physical Mechanisms of Cell Damage in Microcarrier Cell Culture Bioreactors, 1001B
Chisti, M. Y.
—; Moo-Young, M.: Hydrodynamics and Oxygen Transfer in Pneumatic Bioreactor Devices, 487A
Choo, K.-B. See Hsieh, J.-H., 334B
Chopineau, J.
—; McCafferty, F. D.; Therisod, M.; Klibanov, A. M.: Production of Biosurfactants from Sugar Alcohols and Vegetable Oils Catalyzed by Lipases in a Nonaqueous Medium, 208A
Chow, T.-Y. See Hsieh, J.-H., 334B
Chresand, T. J.
—; Dale, B. E.; Hanson, S. L.; Gillies, R. J.: A Stirred Bath Technique for Diffusivity Measurements in Cell Matrices, 1029B
—; Gillies, R. J.; Dale, B. E.: Optimum Fiber Spacing in a Hollow Fiber Bioreactor, 985B
Chu, W.-B. Z.
—; Constantinides, A.: Modeling, Optimization, and Computor Control of the Cephalosporin C Fermentation Process, 277B
Chum, H. L.
—; Johnson, D. K.; Black, S.; Baker, J.; Großmann, K.; Sarkanen, K. V.; Wallace, K.; Schroeder, H. A.: Organosolv Pretreatment for Enzymatic Hydrolysis of Poplars: I. Enzyme Hydrolysis of Cellulosic Residues, 643A
Chung, B. H.
—; Chang, H. N.: Aerobic Fungal Cell Immobilization in a Dual Hollow-Fiber Bioreactor: Continuous Production of a Citric Acid, 205B
Clanet, M.
—; Durand, H.; Tiraby, G.: Enzymatic Saccharification of Municipal Wastes, 930B(C)
Clark, D. S. See Miller, J. F., 407A; Skerker, P. S., 148B
Clark, T. A. See Wong, K. K. Y., 447A
Clarke, K. G.
—; Hansford, G. S.; Jones, D. T.: Nature and Significance of Oscillatory Behavior during Solvent Production by *Clostridium acetobutylicum* in Continuous Culture, 538B
Colonna, P.
—; Buléon, A.; Lemarié, F.: Action of *Bacillus subtilis* α-Amylase on Native Wheat Starch, 895A
Comfort, A. R.
—; Mullon, C. J.-P.; Langer, R.: The Influence of Bond Chemistry on Immobilized Enzyme Systems for *Ex Vivo* Use, 554B
Considine, P. J.
—; O'Rorke, A.; Hackett, T. J.; Coughlan, M. P.: Hydrolysis of Beet Pulp Polysaccharides by Extracts of Solid-State Cultures of *Penicillium capsulatum*, 433A
Constantinides, A. See Chu, W.-B. Z., 277B
Converse, A. O.
—; Matsuno, R.; Tanaka, M.; Taniguchi, M.: A Model of Enzyme Adsorption and Hydrolysis of Microcrystalline Cellulose with Slow Deactivation of the Adsorbed Enzyme, 38B
—; See Tanaka, M., 698B
Cooper, D. G. See Tobin, J. M., 282A(C)
Correia, I. S. See Rosa, M. F., 705A
Corrieu, G. See Picque, D., 19A
Coughlan, M. P. See Considine, P. J., 433A
Cox, P. See Zwart, K. B., 719B(C)
Craveri, R. See Adami, A., 391B(C)
Crichton, R. R. See Germain, P., 249B(C); Lenders, J.-P., 267A
Croughan, M. S.
—; Hamel, J.-F. P.; Wang, D. I. C.: Effects of Microcarrier Concentration in Animal Cell Culture, 975B
Crumbliss, A. L.
—; McLachlan, K. L.; O'Daly, J. P.; Henkens, R. W.: Preparation and Activity of Carbonic Anhydrase Immobilized on Porous Silica Beads and Graphite Rods, 796A

Daka, J. N.
—; Laidler, K. J.; Sipehia, R.; Chang, T. M. S.: Immobilization and Kinetics of Lactate Dehydrogenase at a Rotating Nylon Disk, 213B
Dale, B. E. See Chresand, T. J., 985B, 1029B; Drury, D. D., 966B
Darroch, M. See Andrews, G., 813B
Das, T. R. See Parthasarathy, S., 174B
Dawidowicz, A. See Wojtaś-Wasilewska, M., 507B
Dawson, M. W.
—; Maddox, I. S.; Boag, I. F.; Brooks, J. D.: Application of Fed-Batch Culture to Citric Acid Production by *Aspergillus niger*: The Effects of Dilution Rate and Dissolved Oxygen Tension, 220B
De Bernardez, E. See Pih, N., 311A
Debnath, S. See Banerjee, M., 831B(C)
de Coninck-Chosson, J.
Aerobic Degradation of Cellulose and Adsorption Properties of Cellulases in *Cellulomonas Uda* JC3: Effects of Crystallinity of Substrate, 495A(C)
de la Noüe, J.
—; Ni Eidhin, D.: Improved Performance of Intensive Semicontinuous Cultures of *Scenedesmus* by Biomass Recirculation, 397A
Deloggio, T. J.
—; Graves, D. J.: An Immobilized Hydrogenase from *Alcaligenes eutrophus* H-16, 295B
de Mas, C.
—; Jansen, N. B.; Tsao, G. T.: Production of Optically Active 2,3-Butanediol by *Bacillus polymyxa*, 366A
Demertzis, P. See Akrida-Demertzi, K., 666A
Denac, M.
—; Dunn, I. J.: Packed- and Fluidized-Bed Biofilm Reactor Performance for Anaerobic Wastewater Treatment, 159B
—; Miguel, A.; Dunn. I. J.: Modeling Dynamic Experiments on the Anaerobic Degradation of Molasses Wastewater, 1A
Denda, G. See Berke, W., 130B
Deverell, K. F. See Wong, K. K. Y., 447A
Dhurjati, P. See Bree, M. A., 1067B(C); Kim, S. U., 144A; Pih, N., 311A
DiChristina, T. J. See Arnold, R. G., 1081B
DiCosmo, F. See Facchini, P. J., 935B(C)
DiMasi, D. See Buckland, B. C., 737A
Dinopoulou, G.
—; Rudd, T.; Lester, J. N.: Anaerobic Acidogenesis of a Complex Wastewater: I. The Influence of Operational Parameters on Reactor Performance, 958A
—; Sterritt, R. M.; Lester, J. N.: Anaerobic Acidogenesis of a Complex Wastewater: II. Kinetics of Growth, Inhibition, and Product Formation, 969A
Dintzis, F. R. See Krull, L. H., 321A
DiPaolo, M. See Zabriskie, D. W., 100B(C)
Do, D. D. See Hossain, Md. M., 730A
Dochain, D. See Renard, P., 287A
Doddema, H. J.
Site-Specific Hydroxylation of Aromatic Compounds by Polyphenol Oxidase in Organic Solvents and in Water, 716B(C)
Donaldson, L. A. See Wong, K. K. Y., 447A
Dowsett, J. See Gray, C. J., 607A(C)
Drury, D. D.
—; Dale, B. E.; Gillies, R. J.: Oxygen Transfer Properties of a Bioreactor for Use Within a Nuclear Magnetic Resonance Spectrometer, 966B
Duff, S. J. B.
Use of Surface-Immobilized *Trichoderma* in Batch and Fed-Batch Fermentations, 345A
—; Murray, W. D.: Comparison of Free and Immobilized *Pichia pastoris* Cells for Conversion of Ethanol to Acetaldehyde, 790A
—; Murray, W. D.: Production and application of Methylotrophic Yeast *Pichia pastoris*, 44A
Dunn, I. J. See Denac, M., 1A, 159B; Ryhiner, G., 677B
Dunnill, P. See Bentham, A. C., 984A; Ceen, E. G., 743A; Herbert, A. B., 475B
Durán, N.
—; Reyes, J. L.; Baeza, J.; Campos, V.: Biomass Photochemistry: XII. Chemical and Photochemical Pretreatment of Rice Hull and Its Fungal Degradation, 564B(C)
—; Rodríguez, J.; Gómez, E.; Campos, V.; Baeza, J.: Biomass Photochemistry: XI. Photochemical Pretreatment of Cellulose and Its Fungal Degradation, 215A
Durand, A.
—; Chereau, D.: A New Pilot Reactor for Solid-State Fermentation: Application to the Protein Enrichment of Sugar Beet Pulp, 476A
Durand, H. See Clanet, M., 930B
Dykstra, K. H.
—; Li, X.-M.; Wang, H. Y.: Computor Modeling of Antibiotic Fermentation with On-Line Product Removal, 356B

Edwards, A. G.
—; Ho, C. S.: Effects of Carbon Dioxide on *Pencillium chrysogenum*: An Autoradiographic Study, 1B
Emert, G. H. See Rivers, D. B., 278A(C)
Eskin, S. G. See Frangos, J. A., 1053B
Esterbauer, H. See Steiner, W., 853B
Eto, Y. See Tsuji, T., 675A

Facchini, P. J.
—; DiCosmo, F.; Radvanyi, L. G.; Giguere. Y.: Adhesion of *Catharanthus roseus* Cells to Surfaces: Effect of Substrate Hydrophobicity, 935B(C)
Fan, L. S. See Tong, C. C., 24A
Fanta, G. F. See Slininger, P. J., 759A
Feng, T.-Y. See Hsieh, J.-H., 334B
Fisher, R. R.
—; Glatz, C. E.: Polyelectrolyte Precipitation of Proteins: I. The Effects of Reactor Conditions, 772B
—; Glatz, C. E.: Polyelectrolyte Precipitation of Proteins: II. Models of the Particle Size Distributions, 786B
Fleming, H. P.
—; McFeeters, R. F.; Humphries, E. G.: A Fermentor for Study of Sauerkraut Fermentation, 189A
Flickinger, M. C. See Papoutsakis, E. T., 945B
Fournier, R. L.
Mathematical Model of Microporous Hollow-Fiber Membrane Extractive Fermentor, 235A
—; See Naser, S. F., 628B
Frame, K. K.
—; Hu, W.-S.: A Model for Density-Dependent Growth of Anchorage-Dependent Mammalian Cells, 1061B(C)
Frangos, J. A.
—; McIntire, L. V.; Eskin, S. G.: Shear Stress Induced Stimulation of Mammalian Cell Metabolism, 1053B
Frankena, J.
—; van Verseveld, H. W.; Stouthamer, A. H.: Substrate and Energy Costs of the Production of Excellular Enzymes by *Bacillus licheniformis*, 803B
Fredrickson, A. G. See Baltzis, B. C., 75A
Fujii, M.
—; Homma, T.; Taniguchi, M.: Synergism of α-Amylase and Glucoamylase on Hydrolysis of Native Starch Granules, 910B(C)
Fujii, T. See Fukuda, H., 620A(C)
Fukuda, H.
—; Fujii, T.; Ogawa, T.: Production of Ethylene by a Growth-Suppressed Mutant of *Pencillium digitatum*, 620A(C)
Fukui, M. See Tanaka, M., 897B

Fukushima, Y.
—; Okamura, K.; Imai, K.; Motai, H.: A New Immobilization Technique of Whole Cells and Enzymes with Colloidal Silica and Alginate, 584B
Funada, T. See Kosugi, Y., 349A
Furusaki, S. See Sakaki, K., 603A(C)

Galiotou-Panayotou, M. See Komninos, J., 939B(C)
García, I. See Pascual, C., 374B
Gbewonyo, K. See Buckland, B. C., 737A
Gee, D. A.
—; Ramirez, W. F.: Optimal Temperature Control for Batch Beer Fermentation, 224A
Geoghegan, R. F. See Bree, M. A., 1067B(C)
Georgiou, G.
—; Shuler, M. L.; Wilson, D. B.: Release of Periplasmic Enzymes and Other Physiological Effects of β-Lactamase Overproduction in *Escherichia coli*, 741B
Germain, P.
—; Makaren, J. S.; Crichton, R. R.: Thermal Stabilization of a Chemically Oriented Modified Pullulanase, 249B(C)
Gervais, P.
—; Molin, P.; Grajek, W.; Bensoussan, M.: Influence of the Water Activity of a Solid Substrate on the Growth Rate and Sporogenesis of Filamentous Fungi, 457A
Gibbons, W. R.
—; Westby, C. A.; Arnold, E.: Semicontinuous Diffusion Fermentation of Fodder Beets for Fuel Ethanol and Cubed Protein Feed Production, 696A
Giguere. Y. See Facchini, P. J., 935B(C)
Gijzen, H. J.
—; Zwart, K. B.; Teunissen, M. J.; Vogels, G. D.: Anaerobic Digestion of Cellulose Fraction of Domestic Refuse by Means of Rumen Microorganisms, 749B
—; Zwart, K. B.; Verhagen, F. J. M.; Vogels, G. D.: High-Rate Two-Phase Process for the Anaerobic Degradation of Cellulose, Employing Rumen Microorganisms for an Efficient Acidogenesis, 418A
—; See Zwart, K. B., 719B(C)
Gillies, R. J. See Chresand, T. J., 985B, 1029B; Drury, D. D., 966B
Giuseppin, M. L. F.
—; van Eijk, H. M. J.; Bes, B. C. M.: Molecular Regulation of Methanol Oxidase Activity in Continuous Cultures of *Hansenula polymorpha*, 577B
Glacken, M. W.
—; Adema, E.; Sinskey, A. J.: Mathematical Descriptions of Hybridoma Culture Kinetics I. Initial Metabolic Rates, 491B
Glassy, M. C.
—; Tharakan, J. P.; Chau, P. C.: Serum-Free Media in Hybridoma Culture and Monoclonal Antibody Production, 1015B
Glatz, C. E. See Fisher, R. R., 772B, 786B
Goebel, R. P. See Weissman, J. C., 336A
Gololobov, M. Yu.
—; Borisov, I. L.; Belikov, V. M.; Švedas, V. K.: Acyl Group Transfer by Proteases Forming Acyl–Enzyme Intermediate. Kinetic Model Analysis, 866B
Goma, G. See Chattaway, T., 271B
Gómez, E. See Durán, N., 215A
Gommers, P. J. F.
—; van Schie, B. J.; van Dijken, J. P.; Kuenen, J. G.: Biochemical Limits to Microbial Growth Yields: An Analysis of Mixed Substrate Utilization, 86B
Gondo, S. See Kawakami, M., 369B
Gopalakrishnan, K. S. See Parthasarathy. S., 174B
Grajek, W.
Production of Protein by Thermophilic Fungi from Sugar-Beet Pulp in Solid-State Fermentation, 255B(C)
Grajek, W. See Gervais, P., 457A
Graves, D. J. See Deloggio, T. J., 295B
Gray, C. J.
—; Dowsett, J.: Retention of Insulin in Alginate Gel Beads, 607A(C)
Griffin, H. L. See Krull, L. H., 321A
Grohmann, K. See Chum, H. L., 643A
Gu, K. F.
—; Chang, T. M. S.: Conversion of α-Ketoglutarate into L-Glutamic Acid with Urea as Ammonium Source Using Multienzyme Systems and Dextran-NAD^+ Immobilized by Microencapsulation within Artificial Cells in a Bioreactor, 363B
Guardione, D. See Beltrame, P., 821A
Gupta, M. N. See Khare, S. K., 829A; Rajput, Y. S., 220A

Hackett, T. J. See Considine, P. J., 433A
Hahn-Hägerdal, B. See Zacchi, G., 460B
Hamel, J.-F. P. See Croughan, M. S., 975B
Hanai, S. See Ando, S., 802A
Han, K.
—; Levenspiel, O.: Extended Monod Kinetics for Substrate, Product, and Cell Inhibition, 430B
Hansford, G. S. See Clarke, K. G., 538B
Hanson, S. L. See Chresand, T. J., 1029B
Hansson, T. See Andrews, G., 813B
Hao, O. J. See Wu, Y. C., 257A
Hassan, H. M. See Lee, F.-J. S., 783A
Hatch, R. T. See Yoo, Y. J., 357A, 426A
Hatton, T. A. See Junker, B. H., 55B; Thien, M. P., 604B
Hatzidimitriu, E. See Ostroff, A., 880A(C)
Hayashi, K. See Okamoto, M., 527B
Hediger, T. See Prenosil, J. E., 913A
Heidman, J. A. See Nicol, J., 682A
Heise, S.
—; Manecke, G.; Schroeter-Kermani, C.; Kleinkauf, H.: Covalent Coupling of gramicidin S Synthetase 2 to Water-Soluble Copolymers, 400B(C)
Hempel, D. C. See Wagner, K., 559A
Henkens, R. W. See Crumbliss, A. L., 796A
Herbert, A. B.
—; Dunnill, P.: Limited Modifications of Soya Proteins by Immobilized Subtilisin: Comparison of Products from Different Reactor Types, 475B
Herrmann, J. P. R. See Ceen, E. G., 743A
Higashijima, M. See Matsunaga, T., 834A
Hilton, M. G.
—; Archer, D. B.: Anaerobic Digestion of a Sulfate-Rich Molasses Wastewater: Inhibition of Hydrogen Sulfide Production, 885A(C)
Hirai, Y. See Kitano, H., 547A
Hirata, J. See Laws, E. A., 140B
Ho, C. S.
—; Ju, L.-K.; Baddour, R. F.: The Anomaly of Oxygen Diffusion in Aqueous Xanthan Solutions, 8B
—; Ju, L.-K.: Effects of Microorganisms on Effective Oxygen Diffusion Coefficients and Solubilities in Fermentation Media, 313B
—; See Edwards, A. G., 1B, Ju, L.-K., 995A, 95B
Ho, N. W. Y. See Schwartz, L. S., 733B
Hoare, M. See Bentham, A. C., 984A
Hoffmann, M. R. See Arnold, R. G., 1081B
Hogan, C. M. See Mes-Hartree, M., 725A
Holeček, O. See Linek, V., 482B
Homma, T. See Fujii, M., 910B(C)
Hong, J. See Lee, C. K., 647B; Yoo, Y. J., 357A, 426A
Hossain, Md. M.
—; Do, D. D.: Determination of Intrinsic Parameters for Immobilization Reactions of Catalase and Amyloglucosidase in Porous Glass Supports, 730A
Howell, J. A. See Canovas-Diaz, M., 348B
Hsieh, J.-H.
—; Shih, K.-Y.; Kung, H.-F.; Shiang, M.; Lee, L.-Y.; Meng, M.-H.; Chang, C.-C.; Lin, H.-M.; Shih, S.-C.; Lee, S.-Y.; Chow, T.-Y.; Feng, T.-Y.; Kuo, T.-T.; Choo, K.-B.: Controlled Fed-Batch Fermentation of Recombinant *Saccharomyces cerevisiae* to Produce Hepatitis B Surface Antigen, 334B
Hu, W.-S. See Frame, K. K., 1061B(C); Tao, T.-Y., 1037B
Humphries, E. G. See Fleming, H. P., 189A
Hunt, G. See Buckland, B. C., 737A
Hunt, J. R. See Logan, B. E., 91A
Hunter, J. B.
—; Asenjo, J. A.: A Structured Mechanistic Model of the Kinetics of Enzymatic Lysis and Disruption of Yeast Cells, 929A
Hüsemann, M. H. W.
—; Papoutsakis, E. T.: Solventogenesis in *Clostridium Acetobutylicum* Fermentations Related to Carboxylic Acid and Proton Concentrations, 843B
Hyun, C. K. See Oh, D. K., 569B(C)

Ikesaka, M. See Tanaka, M., 698B
Imai, K. See Fukushima, Y., 584B; Shiomi, T., 664B
Inlow, D.
—; McRae, J.; Ben-Bassat, A.: Fermentation of Corn Starch to Ethanol with Genetically Engineered Yeast, 227B
Ireton, M. J. See Bentham, A. C., 984A
Ise, N. See Kitano, H., 507A(C), 547A
Ishikawa, H. See Kurosawa, H., 183A(C)
Itamunoala, G. E.
Limitations of Methods of Determining Effective Diffusion Coefficients in Cell Immobilization Matrices, 714A
Itoh, K. See Ando, S., 802A

Jackson, M. A.
—; Talburt, D. E.: Purification and Partial Characterization of an Extracellular β-Glucosidase of *Trichoderma reesei* Using Cathodic Run, Polyacrylamide Gel Electrophoresis, 903B(C)
Jacobson, G. K. See Liao, J. C., 855A
Janse, L. See Sweere, A. P. J., 567A, 579A
Jansen, N. B. See de Mas, C., 366A; Schwartz, L. S., 733B; Turner, B. G., 46B
Jeffries, T. W.
—; Sreenath, H. K.: Fermentation of Hemicellulosic Sugars amd Sugar Mixtures by *Candida shehatae*, 502A(C)
Ji, G.-Y. See Tao, T.-Y., 1037B
Johanides, V. See Marković, I., 18B
Johnson, D. K. See Chum, H. L., 643A
Jolicoeur, C. See Beaubien, A., 105B
Jolly, S. O. See Liao, J. C., 855A
Jones, D. T. See Clarke, K. G., 538B
Jones, E. O.
—; Lee, J. M.: Kinetic Analysis of Bioconversion of Cellulose in Attrition Bioreactor, 33A
Joshi, A.
—; Palsson, B. O.: *Escherichia coli* Growth Dynamics: A Three-Pool Biochemically Based Description, 102A
Ju, L.-K.
—; Ho, C. S.: Correlation of Cell Volume Fractions with Cell Concentrations in Fermentation Media, 95B
—; Ho. C. S.; Baddour, R. F.: Simultaneous Measurements of Oxygen Diffusion Coefficients and Solubilities in Fermentation Media with Polarographic Oxygen Electrodes, 995A
—; See Ho, C. S., 8B, 313B
Julien, R. See Bressollier, Ph., 650A
Jungbauer, A.
—; Unterluggauer, F.; Uhl, K.; Buchacher, A.; Steindl, F.; Pettauer, D.; Wenisch, E.: Scaleup of Monoclonal Antibody Purification Using Radial Streaming Ion Exchange Chromatography, 326B
Junker, B. H.
—; Wang, D. I. C.; Hatton, T. A.: Fluorescence Sensing of Fermentation Parameters Using Fiber Optics, 55B
Jurasek, L. See Paice, M. G., 235B(C)

Kaetsu, I. See Tamada, M., 386B(C), 920B(C)
Kainuma, K. See Monma, M., 404B(C)
Kakimoto, T. See Ando, S., 802A
Kaku, T. See Kitano, H., 547A
Kanayama, H.
—; Sode, K.; Karube, I.: Continuous Hydrogen Evolution by Immobilized Recombinant *E. coli* Using a Bioreactor, 396B(C)
Kang, C. H.
—; Sandler, S. I.: A Thermodynamic Model for Two-Phase Aqueous Polymer Systems, 1158B(C)
Karamanev, D. G.
—; Nikolov, L. N.: Influence of Some Physicochemical Parameters on Bacterial Activity of Biofilm: Ferrous Iron Oxidation by *Thiobacillus ferrooxidans*, 295A
Karube, I. See Kanayama, H., 396B(C)
Kasai, N. See Tamada, M., 386B(C), 920B(C)

Katoh, S. See Sada, E., 635A, 467B, 826B(C)
Kawaguchi, T. See Matsunaga, T., 834A
Kawakami, M.
—; Koya, H.; Gondo, S.: Immobilization of Glucose Oxidase on Polymer Membranes Treated by Low-Temperature Plasma, 369B
Kekos, D. See Komninos, J., 939B(C)
Kelly, R. M. See Parameswaran, A. K., 438B; Su, W.-W., 750A(C)
Kerkhof, P. J. A. M. See Pronk, W., 512B
Khare, S. K.
—; Gupta, M. N.: Immobilization of *E. coli* β-Galactosidase and Its Derivatives by Polyacrylamide Gel, 829A
Kim, D. C. See Kim, S. U., 144A
Kim, J. H. See Oh, D. K., 569B(C)
Kim, J. Y.
—; Lee, Y. H.: Fast Response Glucose Microprobe, 755A(C)
Kim, S. U.
—; Kim, D. C.; Dhurjati, P.: Mathematical Modeling for Mixed Culture Growth of Two Bacterial Populations with Opposite Substrate Preferences, 144A
Kimura, T.
—; Ogata, M.; Yoshida, M.; Nakakuki, T.: Continuous Production of Maltotetraose Using Immobilized *Pseudomonas stutzeri* Amylase, 669B
Kirova, N. See Kozhukharova, A., 245B(C)
Kitamura, T. See Matsunaga, T., 834A
Kitano, H.
—; Ise, N.: Pressure Effects on Catalysis by Thermolysin Immobilized on Polymer Latices, 507A(C)
—; Nakamura, K.; Hirai, Y.; Kaku, T.; Ise, N.: Restricted Diffusion Effect on the Binding of Proteins to Porous Polymer Resins as Studied by Repetitive Injection Method, 547A
Kiyokawa, A. See Sada, E., 635A
Kiyoto, K. See Ando, S., 802A
Klečka, G. M.
—; Maier, W. J.: Kinetics of Microbial Growth on Mixtures of Pentachlorophenol and Chlorinated Aromatic Compounds, 328A
Kleinkauf, H. See Heise, S., 400B(C)
Klibanov, A. M. See Chopineau, J., 208A; Mullon, C. J. P., 536A
Kobayashi, N. See Mukataka, S., 760B
Kokini, J. L. See Ostroff, A., 880A(C)
Kokufuta, E.
—; Shimizu, N.; Nakamura, I.: Preparation of Polyelectrolyte-Coated pH-Sensitive Poly(styrene) Microcapsules and Their Application to Initiation-Cessation Control of an Enzyme Reaction, 289B
—; Shimizu, N.; Tanaka, H.; Nakamura, I.: Use of Polyelectrolyte Complex-Stabilized Calcium Alginate Gel for Entrapment of β-Amylase, 756B
—; Shimohashi, M.; Nakamura, I.: Simultaneously Occurring Nitrification and Denitrification under Oxygen Gradient by Polyelectrolyte Complex-Coimmobilized *Nitrosomonas europaea* and *Paracoccus denitrificans* Cells, 382A(C)
Komninos, J.
—; Kekos, D.; Macris, B. J.; Galiotou-Panayotou, M.: Tannin-Resistant α-Amylase from *Calvatia gigantea*, 939B(C)
Kondo, A. See Sada, E., 467B, 635A
Kossen, N. W. F. See Sweere, A. P. J., 567A, 579A
Kosugi, Y.
—; Suzuki, H.; Funada, T.: Hydrolysis of Beef Tallow by Lipase from *Pseudomonas* sp., 349A
Kotyk, A. See Pascual, C., 374B
Koutinas, A. A. See Akrida-Demertzi, K., 666A
Kovalenko, G. A. See Sokolovskii, V. D., 916B(C)
Koya, H. See Kawakami, M., 369B
Kozhukharova, A.
—; Kirova, N.; Popova, Y.; Batsalova, K.; Kunchev, K.: Properties of Glucose Oxidase Immobilization in Gel of Polyvinylalcohol, 245B(C)
Krull, L. H.
—; Dintzis, F. R.; Griffin, H. L.; Baker, F. L.: A Microfibril-Generating Factor from the Cellulase of *Trichoderma reesei*, 321A
Kuenen, J. G. See Gommers, P. J. F., 86B
Kula, M.-R. See Berke, W., 130B
Kumar, R. See Parthasarathy, S., 174B
Kunchev, K. See Kozhukharova, A., 245B(C)
Kung, H.-F. See Hsieh, J.-H., 334B
Kuo, T.-T. See Hsieh, J.-H., 334B
Kurosawa, H.
—; Ishikawa, H.; Tanaka, H.: L-Lactic Acid Production from Starch by Coimmobilized Mixed Culture System of *Aspergillus awamori* and *Streptococcus lactis*, 183A(C)
Laidler, K. J. See Daka, J. N., 213B
Lallai, A.
—; Mura, G.; Miliddi, R.; Mastinu, C.: Effect of pH on Growth of Mixed Cultures in Batch Reactor, 130A
Langer, R. See Comfort, A. R., 554B; Mullon, C. J. P., 536A
Lanzetta, C. See Beltrame, P., 821A
Larsson, M.
—; Mattiasson, B.: Characterization of Aqueous Two-Phase Systems Based on Polydisperse Phase Forming Polymers: Enzymatic Hydrolysis of Starch in a PEG–Starch Aqueous Two-Phase System, 979A
Laval, J. M. See Bourdillon, C., 553A
Laws, E. A.
—; Taguchi, S.; Hirata, J.; Pang, L.: Optimization of Microalgal Production in a Shallow Outdoor Flume, 140B
LeBlanc, R. M. See Carpentier, R., 64B
Leduy, A. See Mulchandani, A., 639B
Lee, C. K.
—; Hong, J.: Membrane Reactor Coupled with Electrophoresis for Enzymatic Production of Aspartic Acid, 647B
Lee, F.-J. S.
—; Hassan, H. M.: Stability and Expression of a Plasmid-Containing Killer Toxin cDNA in Batch and Chemostat Cultures of *Saccharomyces cerevisiae*, 783A
Lee, J. M. See Jones, E. O., 33A
Lee, L.-Y. See Hsieh, J.-H., 334B
Lee, S. B.
—; Ryu, D. D. Y.; Seigel, R.; Park, S. H.: Performance of Recombinant Fermentation and Evaluation of Gene Expression Efficiency for Gene Product in Two-Stage Continuous Culture System, 805A
Lee, S.-Y. See Hsieh, J.-H., 334B
Lee, Y. H. See Kim, J. Y., 755A(C); Tsai, S. P., 713B(C)
Lemarié, F. See Colonna, P., 895A
Lenders, J.-P.
—; Crichton, R. R.: Chemical Stabilization of Glucoamylase from *Aspergillus niger* against Thermal Inactivation, 267A
Leonowicz, A. See Wojtaś-Wasilewska, M., 507B
Lester, J. N. See Dinopoulou, G., 958A, 969A
Levenspiel, O. See Han, K., 430B
Levy, J. A. See Baugh, K. D., 62A
Li, X.-M. See Dykstra, K. H., 356B
—; Liang, B. S.; Wang, H. Y.: Computor Aided Analysis for Biosensing and Screening, 250A
Liang, B. S. See Li, X.-M., 250A
Liao, J. C.
—; Lightfoot, Jr., E. N.: Characteristic Reaction Paths of Biochemical Reaction Systems with Time Scale Separation, 847A
—; Lightfoot, Jr., E. N.: Lumping Analysis of Biochemical Reaction Systems with Time Scale Separation, 869A
—; Lightfoot, Jr., E. N.; Jolly, S. O.; Jacobson, G. K.: Application of Characteristic Reaction Paths: Rate-Limiting Capability of Phosphofructokinase in Yeast Fermentation, 855A
Liapis, A. I. See Arve, B. H., 240A, 616B
Libicki, S. B.
—; Salmon, P. M.; Robertson, C. R.: The Effective Diffusive Permeability of a Nonreacting Solute in Microbial Cell Aggregates, 68
Lightfoot, Jr., E. N. See Liao, J. C., 847A, 855A, 869A
Lim, H. C. See Chang, Y. K., 944A
Linek, V.
—; Beneš, V.; Holeček, O.: Correlation for Volumetric Mass Transfer Coefficient in Mechanically Agitated Aerated Vessel for Oxygen Absorbtion in Aqueous Electrolyte Solutions, 482B
—; Vacek, V.: Comments on Validity of Measuring Oxygen Diffusion Coefficients with Polarographic Oxygen Electrodes, 1010A(C)
Lin, H.-M. See Hsieh, J.-H., 334B
Liu, L.-C.
—; Prokopakis, G. J.; Asenjo, J. A.: Optimization of Enzymatic Lysis of Yeast, 1113B
Lizama, H. M.
—; Suzuki, I.: Bacterial Leaching of a Sulfide Ore By *Thiobacillus ferrooxidans* and *Thiobacillus thiooxidans*: I. Shake Flask Studies, 110B(C)
Löffler, A. I. See Seo, J.-H., 725B(C)
Logan, B. E.
—; Hunt, J. R.: Bioflocculation as a Microbial Response to Substrate Limitations, 91A
López, J. See Andreu, G., 927B(C)
Lortie, R. See Bourdillon, C., 553A; Thomasset, B., 764B
Ludlow, J. M. See Miller, J. F., 407A
Luong, J. H. T.
—; Male, K. B.; Nguyen, A. L.; Mulchandani, A.: Mathematical Modeling of Affinity Ultrafiltration Process, 451B
—; Male, K. B.; Nguyen, A. L.: A Continuous Affinity Ultrafiltration Process for Trypsin Purification, 516A
—; Male, K. B.; Nguyen, A. L.: Synthesis and Charaterization of a Water-Soluble Affinity Polymer for Trypsin Purification, 439A
—; See Mulchandani, A., 639B
Luterek, J. See Wojtaś-Wasilewska, M., 507B
Luyben, K. Ch. A. M. See Sweere, A. P. J., 567A, 579A
Lyberatos, G. See Stephens, M. L., 464A
Mackie, K. L. See Wong, K. K. Y., 447A
Macris, B. J. See Komninos, J., 939B(C)
Maddox, I. S. See Dawson, M. W., 220B
Maier, W. J. See Klečka, G. M., 328A
Majumdar, S. K. See Banerjee, M., 831B(C)
Makaren, J. S. See Germain, P., 249B(C)
Makino, K.
—; Maruo, S.; Morita, Y.; Takeuchi, T.: A Study on the Glutaraldehyde Activation of Hydrophilic Gels for Immobilized Enzymes, 617A(C)
Male, K. B. See Luong, J. H. T., 439A, 516A, 451B
Mandenius, C. F.
Controlling Fermentation of Lignocellulose Hydrolysates in a Continuous Hollow-Fiber Reactor Using Biosensors, 123B
—; Nilsson, B.; Persson, I.; Tjerneld, F.: Kinetic Models for Enzymic Cellulose Degradation in Aqueous Two-Phase Systems, 203A
Manecke, G. See Heise, S., 400B(C)
Mann, J. See Opara, C. C., 470A
Mao, W.-Y. See Yang, X.-M., 1006A(C)
Mao, Z.-X. See Yang, X.-M., 1006A(C)
Marić, V. See Marković, I., 18B
Marković, I.
—; Topolovec, V.; Marić, V.; Johanides, V.: The Barley Protein Degradation: Mechanism of Protein Solubilization during Barley Mashing with Neutral Proteinase, 18B
Martegani, E. See Porro, D., 411B
Martin, C.
—; Negro, M. J.; Alfonsel, M.; Sáez, R.: Enzymatic Hydrolysis of Lignocellulosic Biomass from *Onopordum nervosum*, 341B
Maruo, S. See Makino, K., 617A(C)
Mastinu, C. See Lallai, A., 130A
Matsunaga, T.
—; Higashijima, M.; Sulaswatty, A.; Nishimura, S.; Kitamura, T.; Tsuji, M.; Kawaguchi, T.: Repeated Batch Production of L-Phenylalanine from Phenylpyruvate and NH_4Cl by Immobilized Cells of *Nocardia opaca* under Hydrogen High Pressure, 834A
Matsuno, R. See Converse, A. O., 38B; Tanaka, M., 698B, 897B
Matteau, P. P. See Seifert, G. K. E., 923B(C)
Mattiasson, B. See Larsson, M., 979A
McCafferty, F. D. See Chopineau, J., 208A
McCarty, P. L. See Baugh, K. D., 50A, 562A
McFeeters, R. F. See Fleming, H. P., 189A
McGregor, W. C.
—; Weaver, J. F.; Tansey, S. P.: Antifoam Effects on Ultrafiltration, 385A(C)
McIntire, L. V. See Frangos, J. A., 1053B
McLachlan, K. L. See Crumbliss, A. L., 796A
McRae, J. See Inlow, D., 227B
Means, G. E. See Ampon, K., 689B
Meng, M.-H. See Hsieh, J.-H., 334B
Merchuk, J. C. See Siegel, M. H., 1128B

Mes-Hartree, M.
—; Hogan, C. M.; Saddler, J. N.: Influence of Growth Substrate on Production of Cellulase Enzymes by *Trichoderma harzianum* E58, 725A
Mesters, J. R. See Sweere, A. P. J., 567A
Metzger, L. S. See Backer, M. P., 993B
Miguel, A. See Denac, M., 1A
Mihail, R.
—; Straja, S.: An Analysis of the Steady States of a Chemostat with Applications to Its Design, 87A(C)
Mikuni, K. See Monma, M., 404B(C)
Miliddi, R. See Lallai, A., 130A
Miller, J. F.
—; Almond, E. L.; Shah, N. N.; Ludlow, J. M.; Zollweg, J. A.; Streett, W. B.; Zinder, S. H.; Clark, D. S.: High Pressure–Temperature Bioreactor for Studying Pressure–Temperature Relationships in Bacterial Growth and Productivity, 407A
Mimeault, M. See Carpentier, R., 64B
Mishra, A. K. See Biswas, S. R., 613A(C)
Mitard, A.
—; Riba, J. P.: Morphology and Growth of *Aspergillus Niger* ATCC 26036 Cultivated at Several Shear Rates, 835B(C)
Miya, M. See Shiomi, T., 664B
Miyawaki, O.
—; Wingard, Jr., L. B.: Concentration Step Determination of Diffusion and Partition Coefficients of Ferrocyanide for Membrane-Coated Rotating-Disk Electrode, 179A(C)
Miyoshi, H. See Sada, E., 467B
Modi, A. J. See Sahasrabudhe, S. R., 889A(C)
Modi, V. V. See Sahasrabudhe, S. R., 889A(C)
Molin, P. See Gervais, P., 457A
Monma, M.
—; Mikuni, K.; Kainuma, K.: Repeating Use of *Chalara paradoxa* Amylase by α-Cyclodextrin Affinity Column, 404B(C)
Montenecourt, B. S. See Suh, D. H., 821B(C)
Monzambe, K. M.
—; Naveau, H. P.; Nyns, E.-J.; Bogaert, N.; Bühler, H.: Problematics and Stability of On-Line pH Measurements in Anaerobic Environments: The Jellied Combined Electrode, 659A
Moo-Young, M. See Chisti, M. Y., 487A
Morita, Y. See Makino, K., 617A(C)
Morr, M. See Berke, W., 130B
Motai, H. See Fukushima, Y., 584B
Mukataka, S.
—; Kobayashi, N.; Sato, S.; Takahashi, J.: Variation in Cellulase-Constituting Components from *Trichoderma reesei* with Agitation Intensity, 760B
Mulchandani, A.
—; Luong, J. H. T.; Leduy, A.: Batch Kinetics of Microbial Polysaccharide Biosynthesis, 639B
—; See Luong, J. H. T., 451B
Mullon, C. J.-P.
—; Klibanov, A. M.; Langer, R.: Kinetics of Bilirubin Oxidase and Modeling of an Immobilized Bilirubin Oxidase Reactor for Bilirubin Detoxification, 536A
—; See Comfort, A. R., 554B
Munro, P. A.
—; Van Til, H. J.: Centrifugal Dewatering of Acid Casein Curd: Effect of Casein Manufacturing and Centrifugation Variables on Curd Compression in a Laboratory Centrifuge, 1153B
Mura, G. See Lallai, A., 130A
Murakami, H. See Takazawa, Y., 168A
Murray, W. D. See Duff, S. J. B., 44A, 790A

Nakakuki, T. See Kimura, T., 669B
Nakamura, I. See Kokufuta, E., 382A(C), 289B, 756B
Nakamura, K. See Kitano, H., 547A
Namasivayam, C. See Sridhar, P., 345B
Nanda, G. See Biswas, S. R., 613A(C)
Naser, S. F.
—; Fournier, R. L.: A Numerical Evaluation of a Hollow Fiber Extractive Fermentor Process for the Production of Ethanol, 628B
Navarro, J. See Bezenger, M.-C., 747A(C)
Naveau, H. See Renard, P., 287A
Naveau, H. P. See Monzambe, K. M., 659A
Negro, M. J. See Martín, C., 341B
Neufeld, R. J. See Tobin, J. M., 282A(C)
Nevitt, K. L. See Backer, M. P., 993B
Nguyen, A. L. See Luong, J. H. T., 439A, 516A, 451B
Nicol, J.
—; Benefield L. D.; Wetzel, E. D.; Heidman, J. A.: Activated Sludge Systems with Biomass Particle Support Structures, 682A
Ní Eidhin, D. See de la Noüe, J., 397A
Nienow, A. See Buckland, B. C., 737A
Nikolov, L. N. See Karamanev, D. G., 295A
Nilsson, B. See Mandenius, C. F., 203A
Nishikawa, N. K.
—; Sutcliffe, R.; Saddler, J. N.: The Effect of Wood-Derived Inhibitors on 2,3-Butanediol Production by *Klebsiella pneumoniae*, 624A(C)
Nishimura, S. See Matsunaga, T., 834A
Noh, S. H. See Tsezos, M., 545B
Novais, J. M. See Rosa, M. F., 705A
Novak, R. A.
Alum Flocculation and Bioflocculation of Activated Sludge for Vacuum Filtration, 71B
Nozawa, T. See Sakaki, K., 603A(C)
Nyns, E.-J. See Monzambe, K. M., 659A; Renard, P., 287A

O'Daly, J. P. See Crumbliss, A. L., 796A
Ogata, M. See Kimura, T., 669B
Ogawa, T. See Fukuda, H., 620A(C)
Oh, D. K.
—; Hyun, C. K.; Kim, J. H.; Park, Y. H.: Production of Penicillin in a Fluidized-Bed Bioreactor: Control of Cell Growth and Penicillin Production by Phosphate Limitation, 569B(C)
Okamoto, M.
—; Sakai, T.; Hayashi, K.: Biochemical Switching Device: Monocyclic Enzyme System, 527B
Okamura, K. See Fukushima, Y., 584B
Okos, M. R. See Yang, S.-T., 28B, 797B
Omura, H. See Takazawa, Y., 168A
Opara, C. C.
—; Mann, J.: Development of Ultraporous Fired Bricks as Support for Yeast Cell Immobilization, 470A
O'Rorke, A. See Considine, P. J., 433A
Ostroff, A.
—; Hatzidimitriu, E.; Kokini, J. L.: Thermodynamics of Water and Ethanol Adsorption on Model Biomass Systems, 880A(C)
Ou, K. C. See Wu, Y. C., 257A

Paice, M. G.
—; Bernier, Jr., R.; Jurasek, L.: Viscosity-Enhancing Bleaching of Hardwood Kraft Pulp with Xylanase from a Cloned Gene, 235B(C)
Palsson, B. O. See Joshi, A., 102A
Pang, L. See Laws, E. A., 140B
Papoutsakis, E. T.
—; Flickinger, M. C.: Preface to Animal Cell-culture Symposium, 945B
—; See Cherry, R. S., 1001B; Hüsemann, M. H. W., 843B
Parameswaran, A. K.
—; Schicho, R. N.; Soisson, J. P.; Kelly, R. M.: Effect of Hydrogen and Carbon Dioxide Partial Pressures on Growth and Sulfide Production of the Extremely Thermophilic Archaebacterium *Pyrodictium brockii*, 438B
Park, S. H. See Lee, S. B., 805A
Park, Y. H. See Oh, D. K., 569B(C)
Parthasarathy, S.
—; Das, T. R.; Kumar, R.; Gopalakrishnan, K. S.: Foam Separation of Microbial Cells, 174B
Pascual, C.
—; Alonso, A.; García, I.; Romay, C.; Kotyk, A.: Effect of Ethanol on Glucose Transport, Key Glycolytic Enzymes, and Proton Extrusion in *Saccharomyces cerevisiae*, 374B
Payne, G. F.
—; Payne, N. N.; Shuler, M. L.: Bioreactor Considerations for Secondary Metabolite Production from Plant Cell Tissue Culture: Indole Alkaloids from *Catharanthus roseus*, 905A
—; Shuler, M. L.: Selective Adsorption of Plant Products, 922A
Payne, N. N. See Payne, G. F., 905A

Peretti, S. W.
—; Bailey, J. E.: Transient Response Simulations of Recombinant Microbial Populations, 418B
Persson, I. See Mandenius, C. F., 203A
Peters, A. C.
—; Wimpenny, J. W. T.: A Constant-Depth Laboratory Model Film Fermentor, 263B
Petit, J. M. See Bressollier, Ph., 650A
Petrozzi, S. See Ryhiner, G., 677B
Pettauer, D. See Jungbauer, A., 326B
Picque, D.
—; Corrieu, G.: New Instrument for On-Line Viscosity Measurement of Fermentation Media, 19A
Pih, N.
—; De Bernardez, E.; Dhurjati, P.: Elucidation of Enzyme Control Mechanisms Using Macroscopic Measurements in a Mixed Substrate Fermentation System, 311A
Pilnik, W. See Beldman, G., 160A, 173A
Popova, Y. See Kozhukharova, A., 245B(C)
Popović, M.
—; Robinson, C. W.: External-Circulation-Loop Airlift Bioreactors: Study of the Liquid Circulating Velocity in Highly Vicous Non-Newtonian Liquids, 301B
Porro, D.
—; Martegani, E.; Ranzi, B. M.; Alberghina, L.: Oscillations in Continuous Cultures of Budding Yeast: A Segregated Parameter Analysis, 411B
Prabhakaran, G. See Sridhar, P., 345B
Prenosil, J. E.
—; Hediger, T.: Performance of Membrane Fixed Biocatalyst Reactors: I: Membrane Reactor Systems and Modeling, 913A
Prokopakis, G. J. See Liu, L.-C., 1113B
Pronk, W.
—; Kerkhof, P. J. A. M.; van Helden, C.; van't Riet, K.: The Hydrolysis of Triglycerides by Immobilized Lipase in a Hydrophilic Membrane Reactor, 512B
Pu, H. T.
—; Yang, R. Y. K.: Diffusion of Sucrose and Yohimbine in Calcium Alginate Gel Beads with or without Entrapped Plant Cells, 891B
Pyun, Y. R. See Chang, Y. K., 944A

Radvanyi, L. G. See Facchini, P. J., 935B(C)
Rajput, Y. S.
—; Gupta, M. N.: Coaggregate of Trypsin and Chymotrypsin, 220A
Ramirez, W. F. See Gee, D. A., 224A
Ramkrishna, D. See Turner, B. G., 41A, 46B
Ranzi, B. M. See Porro, D., 411B
Renard, P.
—; Dochain, D.; Bastin, G.; Naveau, H.; Nyns, E.-J.: Adaptive Control of Anaerobic Digestion Processes—A Pilot-Scale Application, 287A
Renaud, P.-Y. See Chattaway, T., 271B
Reyes, J. L. See Durán, N., 564B(C)
Riba, J. P. See Mitard, A., 835B(C)
Rittmann, B. E. See Sáez, P. B., 379B
Rivers, D. B.
—; Emert, G. H.: Factors Affecting the Enzymatic Hydrolysis of Municipal-Solid-Waste Components, 278A(C)
Robertson, C. R. See Libicki, S. B., 68
Robinson, C. W. See Popović, M., 301B
Robnett, B. See Bree, M. A., 1067B(C)
Rodriguez, J. See Durán, N., 215A
Roffler, S. R.
—; Blanch, H. W.; Wilke, C. R.: In Situ Extractive Fermentation of Acetone and Butanol, 135A
—; Wilke, C. R.; Blanch, H. W.: Design and Mathematical Description of Differential Contactors Used in Extractive Fermentations, 192B
Romay, C. See Pascual, C., 374B
Rombouts, F. M. See Beldman, G., 160A, 173A(C)
Rosa, M. F.
—; Correia, I. S.; Novais, J. M.: Improvements in Ethanol Tolerance of *Kluyveromyces fragilis* in Jerusalem Artichoke Juice, 705A
Rudd, T. See Dinopoulou, G., 958A
Ryhiner, G.
—; Petrozzi, S.; Dunn, I. J.: Operation of a Three-Phase Biofilm Fluidized Sand Bed Reactor for Aerobic Wastewater Treatment, 677B
Ryu, D. D. Y. See Lee, S. B., 805A; Takamatsu, S., 184B

Sada, E.
—; Katoh, S.; Kiyokawa, A.; Kondo, A.: Characterization of Fractionated Polyclonal Antibodies for Immunoaffinity Chromatography, 635A
—; Katoh, S.; Miyoshi, H.; Yamanaka, K.; Kondo, A.: Effects of Charged Groups in Haptens on Adsorption Equilibrium of Hapten Antibody, 467B
—; Katoh, S.; Terashima, M.; Tsukiyama, K.-I.: Entrapment of an Ion-Dependent Enzyme into Reverse-Phase Evaporation Vesicles, 826B(C)
Saddler, J. N. See Mes-Hartree, M., 725A; Nishikawa, N. K., 624A(C)
Sáez, P. B.
—; Rittmann, B. E.: Improved Pseudoanalytical Solution for Steady-State Biofilm Kinetics, 379B
Sáez, R. See Martín, C., 341B
Sahasrabudhe, S. R.
—; Modi, A. J.; Modi, V. V.: Dehalogenation of 3-Chlorobenzoate by Immobilized *Pseudomonas sp.* B13 Cells, 889A(C)
Sakai, T. See Okamoto, M., 527B
Sakai, Y. See Tani, Y., 1165B
Sakaki, K.
—; Nozawa, T.; Furusaki, S.: Effect of Intraparticle Diffusion in Ethanol Fermentation by Immobilized *Zymomonas mobilis*, 603A(C)
Salmon, P. M. See Libicki, S. B., 68
Samuelov, N. S.
Kinetics and Regulation of β-Lactamase Formation in Methylotrophic Bacterium, 125A
San, K.-Y. See Cardello, R. J., 519B
Sandler, S. I. See Kang, C. H., 1158B(C)
Sands, J. A. See Suh, D. H., 821B(C)
Sardonini, C. A.
—; Barngrover, D.: Oxygen, Bicarbonate, and Acid Metabolism Determinations in Mouse Cell Microcarrier Culture, 1073B(C)
Sarkanen, K. V. See Chum, H. L., 643A
Sato, S. See Mukataka, S., 760B
Satoh, M. See Shiomi, T., 664B
Sattler, W. See Steiner, W., 853B
Sawai, T. See Tani, Y., 1165B
Schaeffer, J. R. See Burdick, B. A., 390A(C)
Schicho, R. N. See Parameswaran, A. K., 438B
Scholze, R. J. See Wu, Y. C., 257A
Schroeder, H. A. See Chum, H. L., 643A
Schroeter-Kermani, C. See Heise, S., 400B(C)
Schüz, H.-J. See Berke, W., 130B
Schwartz, L. S.
—; Jansen, N. B.; Ho, N. W. Y.; Tsao, G. T.: Plasmid Instability Kinetics of the Yeast S288C pUCKm8 [cir$^+$] in Non-Selective and Selective Media, 733B
Searle-van Leeuwen, M. F. See Beldman, G., 160A
Seifert, G. K. E.
—; Matteau, P. P.: An Automatic Aseptic Bioreactor Sampling System, 923B(C)
Seigel, R. See Lee, S. B., 805A
Seo, J-H.
—; Löffler, A. I.; Bailey, J. E.: A Parametric Study of Cloned Fusion Protein Expression in *Escherichia coli*, 725B(C)
Seressiotis, A.
—; Bailey, J. E.: MPS: An Artificially Intelligent Software System for the Analysis and Synthesis of Metabolic Pathways, 587A
Shah, N. N. See Miller, J. F., 407A
Shaw, J. F. See Wang, Y. J., 628A(C)
Sheu, J. Y. See Wang, Y. J., 628A(C)
Shiang, M. See Hsieh, J.-H., 334B
Shibai, H. See Tsuji, T., 675A
Shih, K.-Y. See Hsieh, J.-H., 334B
Shih, S.-C. See Hsieh, J.-H., 334B
Shimizu, N. See Kokufuta, E., 289B, 756B
Shimohashi, M. See Kokufuta, E., 382A(C)
Shiomi, T.
—; Tohyama, M.; Satoh, M.; Miya, M.; Imai, K.: Properties of Invertase Immobilized on the Poly(ethylene-co-Vinyl Alcohol) Hollow Fiber Membrane, 664B
Shuler, M. L. See Georgiou, G., 741B; Payne, G. F., 905A, 922A
Siegel, M. H.
—; Merchuk, J. C.: Mass Transfer in a Rectangular Air-Lift Reactor: Effects of Geometry and Gas Recirculation, 1128B
Sinha, S.
Theoretical Study of Tryptophan Operon: Application in Microbial Technology, 117A
Sinskey, A. J. See Glacken, M. W., 491B
Sipehia, R. See Daka, J. N., 213B
Skerker, P. S.
—; Clark, D. S.: Catalytic Properties and Active-Site Structural Features of Immobilized Horse Liver Alcohol Dehydrogenase, 148B
Skoog, K. See Zacchi, G., 460B
Slaber, P. L. See Backer, M. P., 993B
Slininger, P. J.
—; Bothast, R. J.: Continuous Fermentation of Feed Streams Containing D-Glucose and D-Xylose in a Two-Stage Process Utilizing Immobilized *Saccharomyces cerevisiae* and *Pachysolen tannophilus*, 1104B
—; Fanta, G. F.; Abbott, T. P.: Glucoamylase Immobilized on Acid-Hydrolyzed Starch Graft Polyacrylonitrile, 759A
Sode, K. See Kanayama, H., 396B(C)
Soisson, J. P. See Parameswaran, A. K., 438B
Sokół, W.
Dynamics of Continuous Stirred-Tank Biochemical Reactor Utilizing Inhibitory Substrate, 198A
Uptake Rate of Phenol by *Pseudomonas putida* Grown in Unsteady State, 1097B
Sokolovskii, V. D.
—; Kovalenko, G. A.: Immobilization of Oxydoreductases on Inorganic Supports Based on Alumina: The Role of Mutual Correspondence of Enzyme-Support Hydrophobic–Hydrophilic Characters, 916B(C)
Solà, C. See Andreu, G., 927B(C)
Sreenath, H. K. See Jeffries, T. W., 502A(C)
Sridhar, P.
—; Namasivayam, C.; Prabhakaran, G.: Algae Flocculation in Reservoir Water, 345B
Srivastava, R. C.
—; Tandon, A.: Photo-Osmosis through Liquid Membrane Bilayers Generated by Bacteriorhodopsin, 511A
Steindl, F. See Jungbauer, A., 326B
Steiner, W.
—; Sattler, W.; Esterbauer, H.: Adsorption of *Trichoderma reesei* Cellulase on Cellulose: Experimental Data and Their Analysis by Different Equations, 853B
Stephens, M. L.
—; Lyberatos, G.: Effect of Cycling on the Stability of Plasmid-Bearing Microorganisms in Continuous Culture, 464A
Sterritt, R. M. See Dinopoulou, G., 969A
Stouthamer, A. H. See Frankena, J., 803B
Straja, S. See Mihail, R., 87A(C)
Streett, W. B. See Miller, J. F., 407A
Sublette, K. L.
Production of Microbial Biomass Protein from Autotrophic Fermentation of Hydrogen Sulfide, 408B(C)
Su, C.-S. See Yang, C.-P., 595B
Su, W.-W.
—; Kelly, R. M.: Effect of Hyperbaric Oxygen and Carbon Dioxide on Heterotrophic Growth of the Extreme Thermophile *Sulfolobus acidocaldarius*, 750A(C)
Suh, D. H.
—; Becker, T. C.; Sands, J. A.; Montenecourt, B. S.: Effects of Temperature on Xylanase Secretion by *Trichoderma reesei*, 821B(C)
Sulaswatty, A. See Matsunaga, T., 834A
Sutcliffe, R. See Nishikawa, N. K., 624A(C)
Suzuki, H. See Kosugi, Y., 349A
Suzuki, I. See Lizama, H. M., 110B(C)
Svedas, V. K. See Gololobov, M. Yu., 866B
Sweere, A. P. J.
—; Janse, L.; Luyben, K. Ch. A. M.; Kossen, N. W. F.: Experimental Simulation of Oxygen Profiles and Their Influence on Baker's Yeast Production: II. Two-Fermentor System, 579A
—; Mesters, J. R.; Janse, L.; Luyben, K. Ch. A. M.; Kossen, N. W. F.: Experimental Simulation of Oxygen Profiles and Their Influence on Baker's Yeast Production: I. One-Fermentor System, 567A
Szczodrak, J.
The Enzymatic Hydrolysis and Fermentation of Pretreated Wheat Straw to Ethanol, 771B
—; Targoński, Z.: Selection of Thermotolerant Yeast Strains for Simultaneous Saccharification and Fermentation of Cellulose, 300A

Taguchi, S. See Laws, E. A., 140B
Takahashi, J. See Mukataka, S., 760B
Takamatsu, S.
—; Ryu, D. D. Y.: Recirculating Bioreactor-Separator System for Simultaneous Biotransformation and Recovery of Product: Immobilized L-Aspartate β-Decarboxylase Reactor System, 184B
Takano, S. See Tsuji, T., 675A
Takazawa, Y.
—; Tokashiki, M.; Murakami, H.; Yamada, K.; Omura, H.: High-Density Culture of Mouse–Human Hybridoma in Serum-Free Defined Medium, 168A
Takeuchi, T. See Makino, K., 617A(C)
Takezawa, M. See Tsuji, T., 675A
Talburt, D. E. See Jackson, M. A., 903B(C)
Tamada, M.
—; Kasai, N.; Kaetsu, I.: Effect of Stucture of Polymer Support on the Growth of *Sporotrichum cellulophilum* Immobilized by Polymerization Induced by Gamma Rays, 386B(C)
—; Kasai, N.; Kaetsu, I.: Estimation of Cellulase Activity Based on Glucose Productivity, 920B(C)
Tanaka, H. See Kokufuta, E., 756B; Kurosawa, H., 183A(C)
Tanaka, M. See Converse, A. O., 38B
—; Fukui, M.; Matsuno, R.: Removal of Lignin and Reuse of Cellulases for Continuous Saccharification of Lignocelluloses, 897B
—; Ikesaka, M.; Matsuno, R.; Converse, A. O.: Effect of Pore Size in Substrate and Diffusion of Enzyme on Hydrolysis of Cellulosic Materials with Cellulases, 698B
Tandon, A. See Srivastava, R. C., 511A
Tang, I.-C. See Yang, S. T., 28B, 797B
Tani, Y.
—; Sawai, T.; Sakai, Y.: Production of Catalytic Cells for Formaldehyde Production and Alcohol Oxidase by a Catabolite Repression-Insensitive Mutant of a Methanol Yeast, *Candida boidinii* A5, 1165B
Taniguchi, M. See Converse, A. O., 38B; Fujii, M., 910B(C)
Tansey, S. P. See McGregor, W. C., 385A(C)
Tao, T.-Y.
—; Ji, G.-Y.; Hu, W.-S.: Serial Propagation of Mammalian Cells on Gelatin-Coated Microcarriers, 1037B
Tapie, P.
—; Bernard, A.: Microalgae Production: Technical and Economic Evaluations, 873B
Targoński, Z. See Szczodrak, J., 300A
Terashima, M. See Sada, E., 826B(C)
Teunissen, M. J. See Gijzen, H. J., 749B
Tharakan, J. P. See Glassy, M. C., 1015B
Therisod, M. See Chopineau, J., 208A
Thiele, J. H.
—; Zeikus, J. G.: The Anion-Exchange Substrate Shuttle Process: A New Approach to Two-Stage Biomethanation of Organic and Toxic Wastes, 521A
Thien, M. P.
—; Hatton, T. A.; Wang, D. I. C.: Separation and Concentration of Amino Acids Using Liquid Emulsion Membranes, 604B
Thomas, C. R. See Adams, H. L., 707B(C)
Thomas, D. See Thomasset, B., 764B
Thomasset, B.
—; Thomas, D.; Lortie, R.: Influence of Immobilization Procedure and Salt Environment on Functional Stability of Chloroplast Membranes: Experimental Data and Numerical Analysis, 764B
Tiraby, G. See Clanet, M., 930B
Tjerneld, F. See Mandenius, C. F., 203A
Tobin, J. M.
—; Cooper, D. G.; Neufeld, R. J.: The Effects of Cation Competition on Metal Adsorption by *Rhizopus Arrhizus* Biomass, 282A(C)
Tohyama, M. See Shiomi, T., 664B
Tokashiki, M. See Takazawa, Y., 168A
Tompkins, R. G.
—; Carter, E. A.; Carlson, J. D.; Yarmush, M. L.: Enzymatic Function of Alginate Immobilized Rat Hepatocytes, 11A
Tong, C. C.
—; Fan, L. S.: Concentration Multiplicity in a Draft Tube Fluidized-Bed Bioreactor Involving Two Limiting Substrates, 24A
Topolovec, V. See Marković, I., 18B
Trezzi, M. See Adami, A., 391B(C)
Tsai, S. P.
—; Lee, Y. H.: Application of Metabolic Pathway Stoichiometry to Statistical Analysis of Bioreactor Measurement Data, 713B(C)
Tsao, G. T. See de Mas, C., 366A; Schwartz, L. S., 733B

Tsezos, M.
—; Noh, S. H.; Baird, M. H. I.: A Batch Reactor Mass Transfer Kinetic Model for Immobilized Biomass Biosorption, 545B
Tsuji, M. See Matsunaga, T., 834A
Tsuji, T.
—; Eto, Y.; Takano, S.; Takezawa, M.; Yokogawa, Y.; Shibai, H.: Discovery of a Human Erythroid Differentiation Factor (EDF) and Its Large-Scale Production, 675A
Tsukiyama, K.-I. See Sada, E., 826B(C)
Turner, B. G.
—; Ramkrishna, D.: Revised Enzyme Synthesis Rate Expression in Cybernetic Models of Bacterial Growth, 41A
—; Ramkrishna, D.; Jansen, N. B.: Cybernetic Modeling of Bacterial Cultures at Low Growth Rates: Mixed-Substrate Systems, 46B

Uhl, K. See Jungbauer, A., 326B
Unterluggauer, F. See Jungbauer, A., 326B

Vacek, V. See Linek, V., 1010A(C)
Van Den Heuvel, J. C.
—; Beeftink, H. H.: Kinetic Effects of Simultaneous Inhibition by Substrate and Product, 718A
van Dijken, J. P. See Gommers, P. J. F., 86B
van Eijk, H. M. J. See Giuseppin, M. L. F., 577B
van Helden, C. See Pronk, W., 512B
Vanni Shanks, J.
—; Bailey, J. E.: Estimation of Intracellular Sugar Phosphate Concentrations in *Saccharomyces cerevisiae* Using ^{31}P Nuclear Magnetic Resonance Spectroscopy, 1138B
van Schie, B. J. See Gommers, P. J. F., 86B
Van Til, H. J. See Munro, P. A., 1153B
van't Riet, K. See Pronk, W., 512B
van Verseveld, H. W. See Frankena, J., 803B
Veeramallu, U.
—; Agrawal, P.: Study of Fermentation Behavior and Formulation of a Semidefined Nutrient Medium Based on Acid-Production Measurements in *Z. mobilus* Cultures, 770A
Verhagen, F. J. M. See Gijzen, H. J., 418A
Viera, F. B.
—; Barragan, B. B.; Busto, B. L.: Reversible Immobilization of Soybean β-Amylase on Phenylboronate–Agarose, 711A
Vogels, G. D. See Gijzen, H. J., 418A, 749B; Zwart, K. B., 719B(C)
Voragen, A. G. J. See Beldman, G., 160A, 173A(C)

Wagner, K.
—; Hempel, D. C.: Biodegradation by Immobilized Bacteria in an Airlift-Loop Reactor—Influence of Biofilm Diffusion Limitation, 559A
Wallace, K. See Chum, H. L., 643A
Wandrey, C. See Berke, W., 130B
Wang, D. I. C. See Croughan, M. S., 975B; Junker, B. H., 55B; Thien, M. P., 604B
Wang, F. F. See Wang, Y. J., 628A(C)
Wang, H. Y. See Dykstra, K. H., 356B; Li, X.-M., 250A
Wang, Y. J.
—; Sheu, J. Y.; Wang, F. F.; Shaw, J. F.: Lipase-Catalyzed Oil Hydrolysis in the Absence of Added Emulsifier, 628A(C)
Weaver, J. F. See McGregor, W. C., 385A(C)
Weissman, J. C.
—; Goebel, R. P.; Benemann, J. R.: Photobioreactor Design: Mixing, Carbon Utilization, and Oxygen Accumulation, 336A
Wenisch, E. See Jungbauer, A., 326B
Westby, C. A. See Gibbons, W. R., 696A
Westerfield, G. See Buckland, B. C., 737A
Wetzel, E. D. See Nicol, J., 682A
Wilke, C. R. See Roffler, S. R., 135A, 192B
Wilson, D. B. See Georgiou, G., 741B
Wimpenny, J. W. T. See Peters, A. C., 263B
Wingard, Jr., L. B. See Miyawaki, O., 179A(C)
Wittrup, K. D.
—; Bailey, J. E.: A Segregated Model of Recombinant Multicopy Plasmid Propagation, 304A
Wojtaś-Wasilewska, M.
—; Luterek, J.; Leonowicz, A.; Dawidowicz, A.: Dearomatization of Lignin Derivatives by Fungal Protocatechuate 3,4-Dioxygenase Immobilized on Porosity Glass, 507B
Wong, K. K. Y.
—; Deverell, K. F.; Mackie, K. L.; Clark, T. A.; Donaldson, L. A.: The Relationship Between Fiber Porosity and Cellulose Digestibility in Steam-Exploded *Pinus radiata*, 447A
Wu, Y. C.
—; Hao, O. J.; Ou, K. C.; Scholze, R. J.: Treatment of Leachate from a Solid Waste Landfill Site Using a Two-Stage Anaerobic Filter, 257A

Yadav, J. S.
SSF of Wheat Straw with Alcaliphilic *Coprinus*, 414A
Yamada, K. See Takazawa, Y., 168A
Yamanaka, K. See Sada, E., 467B

Yang, C.-P.
—; Su, C.-S.: Synthesis of Aspartame Precursor: α-L-Aspartyl-L-Phenylalanine Methyl Ester in Ethyl Acetate Using Thermolysin Entrapped in Polyurethane, 595B
Yang, R. Y. K. See Pu, H. T., 891B
Yang, S.-S.
Protein Enrichment of Sweet Potato Residue with Amylolytic Yeasts by Solid-State Fermentation, 886B
Yang, S.-T.
—; Tang, I.-C.; Okos, M. R.: Kinetics and Mathematical Modeling of Homoacetic Fermentation of Lactate by *Clostridium formicoaceticum*, 797B
—; Tang, I.-C.; Okos, M. R.: Defined Bacterial Culture Development for Methane Generation from Lactose, 28B
Yang, S.-Z. See Yang, X.-M., 1006A(C)
Yang, X.-M.
—; Mao, Z.-X.; Yang, S.-Z.; Mao, W.-Y.: An Improved Method for Determination of the Volumetric Oxygen Transfer Coefficient in Fermentation Processes, 1006A(C)
Yarmush, M. L. See Tompkins, R. G., 11A
Yokogawa, Y. See Tsuji, T., 675A
Yoo, Y. J.
—; Cadman, T. W.; Hong, J.; Hatch, R. T.: Fed-Batch Fermentation for the Production of α-Amylase by *Bacillus Amyloliquefaciens*, 426A
—; Cadman, T. W.; Hong, J.; Hatch, R. T.: Kinetics of α-Amylase Synthesis from *Bacillus amyloliquefaciens*, 357A
Yoshida, M. See Kimura, T., 669B

Zabriskie, D. W.
—; DiPaolo, M.: Removal of Nucleic Acid Contaminants Using Nuclease Enzymes during Protein Isolation, 100B(C)
Zacchi, G.
—; Skoog, K.; Hahn-Hägerdal, B.: Economic Evaluation of Enzymatic Hydrolysis of Phenol-Pretreated Wheat Straw, 460B
Zeikus, J. G. See Thiele, J. H., 521A
Zinder, S. H. See Miller, J. F., 407A
Zollweg, J. A. See Miller, J. F., 407A
Zwart, K. B.
—; See Gijzen, H. J., 418A, 749B
—; Gijzen, H. J.; Cox, P.; Vogels, G. D.: Anaerobic Digestion of a Cellulosic Fraction of Domestic Refuse by a Two-Phase Rumen-Derived Process, 719B(C)

Subject Index to Volumes 31 and 32

Please note that A refers to Volume 31 and B refers to Volume 32

Acetone, 135A
—, *in situ* extractive fermentation of, 135A
Acid casein curd, 1153B
Acid-hydrolyzed starch graft polyacrylonitrile, glucoamylase immobilized on, 759A
Acid production of *Zymomonas mobilis*, 770A
Activated sludge, 71A
Activated sludge systems with biomass support particles, 682A
Acyl group transfer, 866B
Adsorption, selective, of plant products, 922A
Aerobic fungal cell immobilization in dual hollow-fiber bioreactor (DHFBR), 205B
Aerobic wastewater treatment, three-phase biofilm fluidized sand reactor for, 677B
Affinity chromatography (biospecific adsorption), 240A
—, modeling and analysis of, 240A
Affinity polymer, water-soluble, for trypsin purification, 439A
Affinity ultrafiltration process, mathematical model of, 451B
Agitation intensity, 760B
Agitator retrofitting for improved performance in viscous mycelial fermentations, 737A
Agricultural waste, 886B
Airlift-loop reactor, biodegradation by immobilized bacteria in, 559A
Air-lift reactor, 1128B
Alanine, production of, using cells immobilized in gelatin on nylon mesh, 390A
Albertsson, 1158B
Alcaligenes eutrophus H-16, 295B
Alcoholic fermentation, industrial-scale, of raisin extract, 666A
Alcoholic fermentation, nitrogen influence on, 747A
Alcohol oxidase, 1165B
Alcohol, production of, 831B
Algae flocculation, 345B
Algae, production of, 873B
Alginate, 11A
Alginate gel beads, retention of insulin in, 607A
α-amylase, 910B, 939B
α-Amylase synthesis from *Bacillus amyloliquefaciens*, 357A
α-cyclodextrin affinity column, 402B
α-ketoglutarate, 363B
Alum flocculation, 71A
Alumina, 916B
Amino acids, industrial production of, 117A
Amino acids, production of, using cells immobilized in gelatin on nylon mesh, 390A
Amino acids, separation and concentration of, 604B
Amyloglucosidase and catalase, immobilization reactions of, 730A
Amylolytic yeasts, 886B
Anaerobic acidogenesis of wastewater: influence of operational parameters on reactor performance, 958A
—, kinetics of growth, inhibition, and product formation, 969A
Anaerobic biofilm model, 348B
Anaerobic degradation of cellulose, two-stage, 418A
Anaerobic degradation, of molasses, wastewater, 1A
Anaerobic digestion, 348B, 749B
Anaerobic digestion of sulfate-rich molasses wastewater, 885A
Anaerobic digestion, processes, adaptive control for, 287A
Anaerobic digestion, rumen-derived, of domestic refuse, 719B
Anaerobic filter, two-stage, 257A
—, for leachate treatment, 257A
Anaerobic wastewater treatment, kinetic effects of simultaneous inhibition by substrate and product in, 718A
Anaerobic wastewater treatment, packed-bed reactor (PBR) for, 159B
Animal cell bioreactor, 975B
Animal cell culture, 966B, 975B, 985B, 993B, 1001B, 1015B, 1029B, 1037B, 1053B, 1061B, 1067B, 1073B
Anion-exchange substrate shuttle process for biomethanation of wastes, 521A
Antibiotic fermentation, 356B
Antibiotic, production of, 277B
Antibodies, monoclonal, 993B
Antibody purification, monoclonal, 326B
Antifoaming, effects on ultrafiltration of, 385A
Aqueous polymer system, 1158B
Aqueous two-phase systems, 203A
—, enzymic degradation of cellulose in, 203A
—, determining the binodial of, 979A
Aqueous xanthan solutions, anomaly of oxygen diffusion in, 8B
Aromatic compounds, chlorinated, pentachlorophenol and, kinetics of microbial growth on, 328A
Aromatic compounds, hydroxylation of, 716B
Aseptic bioreactor sampling system, 923B
Aspartame precursor, synthesis of, 595B
Aspartic acid production, membrane reactor with electrophoresis for, 647B
Aspartic acid, production of, using cells immobilized in gelatin on nylon mesh, 390A
Aspergillus awamori, 183A
—, in mixed culture lactic acid production, 183A
Aspergillus niger, 835B
Aspergillus ochraceus, production of xylanase and β-xylosidase by, 613A
—, 11α-hydroxylation of progesterone by, 743A
ATP, continuous regeneration of, 130B
Autotrophic fermentation, 408B
Avicel, 853B

Bacillus amyloliquefaciens, kinetics of α-amylase synthesis from, 357A
Bacillus amyloliquefaciens, production of α-amylase by, fed-batch fermentation for, 426A
Bacillus licheniformis, 803B
Bacillus polymyxa for production of optically active 2,3-butanediol, 366A
Bacillus subtilis, α-amylase of, action on native wheat starch of, 895A
Bacteria, removal of, 813B
Bacterial activity of mixed cultures, 130A
—, effect of Ph on, 130A
Bacterial cultures, low-growth-rate behavior of, cybernetic modeling of, 46B
Bacterial growth, 41A
Bacterial growth and productivity, pressure-temperature relationships in, bioreactor for study of, 407A
Bacterial immobilization, biodegradation by, in airlift-loop reactor, 559A
Bacterial leaching of sulfide ore, 110B
Bacteriorhodopsin, liquid membrane bilayers generated by, photo-osmosis through, 511A
Baker's yeast, production of, influence of changing oxygen concentration on (one-fermentor system), 567A
Baker's yeast, production of, influence of changing oxygen concentration on (two-fermentor system), 579A
Barley mashing with neutral proteinase, mechanism of protein solubilization during, 18B
Batch beer fermentation, 224A
—, optimal temperature control of, 224A
Batch fermentation, surface-immobilized *Trichoderma* used in, 345A
Batch kinetics of microbial polysaccharide biosynthesis, 639B
Batch reactor mass transfer kinetic model for immobilized biomass biosorption, 545B
Batch reactors, design of controllers for, 519B
Beef tallow, hydrolysis of, by lipase from *Pseudomonas* sp., 349A
Beer, 224A
—, batch fermentation of, 224A
Beet pulp polysaccharides, hydrolysis of, by extracts of *Penicillium capsulatum*, 433A
β-amylase, 756B
β-glucosidase, 160A, 903B
—, from *Trichoderma viride*, 160A
β-lactamase(s), 125A, 733B, 741B
—, kinetics and regulation of, 125A
β-Xylosidase, production of, by *Aspergillus ochraceus*, 613A
Bilevel forgetting factor (BFF), adaptive optimization of a continuous culture using, 944A
Bilirubin detoxification, immobilized bilirubin oxidase reactor for, 536A
Bilirubin oxidase reactor, immobilized, for bilirubin detoxification, 536A
Biochemical limits to microbial growth yields, 86B
Biochemical reaction system, reaction paths of, 847A
Biochemical reaction systems, lumping analysis of, 869A
Biochemical switching devices, 527B
Biodegradation by immobilized bacteria in airlift-loop reaction, 559A
Biodegradation of phenol, inhibiting action of chlorophenols on, 821A
Biofilm kinetics, steady-state, 379B
Biofilm model, anaerobic, 348B
Bioflocculation, 71A, 91A
Biofloc particles, 24A
Biological reactor, 87A
Biomass, lignocellulosic, 341B
Biomass recirculation, improved performance of semicontinuous cultures of *Scenedesmus obliquus* by, 397A
Biomass support particles, activated sludge systems with, 682A
Biomass systems, thermodynamics of water and ethanol adsorption on, 880A
Biomembranes, 826B
Biomethanation of organic and toxic wastes, 521A
Biomethanation pilot reactor, adaptive control of anaerobic digestion processes on, 287A
Bioreactor, 19A, 75A, 396B, 966B,
—, animal cell, 975B
—, aseptic, 923B
—, attrition, 33A
—, draft tube fluidized-bed, 24A
—, hollow fiber, 985B
—, microcarrier cell culture, 1001B
Bioreactor for studying pressure-temperature relationships in bacterial growth and productivity, 407A
Bioreactor measurement data, metabolic stoichiometry in statistical analysis of, 713B
Bioreactor-separator system for product biotransformation and recovery, 184B

Bioreactors, external-circulation-loop airlift, 301B
Bioreactors, pneumatic, hydrodynamics and oxygen transfer in, 487A
Bioreactors, spiral-wound, production of aspartic acid and alanine using, 390A
Biosensors, 250A
—, computer-aided analysis for screening with, 250A
Biospecific adsorption, 240A
—, modeling and analysis of, 240A
Biospecific adsorption in countercurrent beds, 616B
Biosurfactants, 208A
—, production of, 208A
Bleaching of hardwood kraft pulp with xylanase, 235B
Bond chemistry influence on immobilized enzyme systems, 554B
Bubble column reactor (BC), 301B
Budding yeast, oscillating continuous cultures of, 411B
2,3-Butanediol, optically active, *Bacillus polymyxa* for production of, 366A
2,3-butanediol, production of, by *Klebsiella pneumoniae*, effect of wood-derived inhibitors on, 624A
Butanol, 135A
—, *in situ* extractive fermentation of, 135A

Calcium alginate, 391B
Calcium alginate gel, 756B
Calcium alginate gel beads, 891B
Calvatia gigantea, 939B
Candida boidinii AS, 1165B
Candida shehatae, fermentation of hemicellulosic sugars and sugar mixtures by, 502A
Capillary Membrane Fixed Enzyme Reactor (CAMFER) performance, 913A
Carbon dioxide, effect on *Penicillium chrysogenum* of, 1B
Carbonic anyhydrase, preparation and activity of, 796A
Carbon utilization, mixing, and oxygen accumulation, photobioreactor designed for, 336A
Carboxylic acid, 843B
Casein manufacturing, 1153B
Catalase and amyloglucosidase, immobilization reactions of, 730A
Catalytic cells, 1165B
Catalytic properties and structural features of horse liver alcohol dehydrogenase, 148B
Catharanthus roseus cells, 935B
Catharanthus roseus, indole alkaloids from, 905A
Cation competition effect on metal adsorption by *R. arrhizus*, 282A
Cedar, increased digestibility of, 802A
Cell damage, 1001B
Cell immobilization matrices, determining effective diffusion coefficients in, 714A
Cell mass, 144A
Cell matrices, 1029B
Cellobiose hydrolysis, 391B
Cellular productivity of a continuous culture, bilevel forgetting factor (BFF) for adaptive optimization of, 944A
Cellular uptake rates, 91A
Cellulase, 760B, 853E
Cellulase, activity, 920B
Cellulase enzyme production by *Trichoderma harzianum* E58, 725A
Cellulases, 897B
Cellulases, adsorption properties of, 495A
Cellulomonas uda JC 3, aerobic degradation of cellulose and adsorption properties of cellulases in, 495A
Cellulose, 33A, 203A, 853B, 920B
—, aerobic degradation of, 495A
—, enzymic degradation of, 203A
—, enzymatic degradation of, 215A
—, hydrolysis of, and enzyme adsorption, 38B
—, photochemical pretreatment of, 215A
—, saccharification and fermentation of, thermotolerant yeast strains for, 300A
—, two-stage, anaerobic degradation of, 418A
Cellulose fraction, 749B
Cellulose hydrolysis, 173A
—, synergism in, 173A
Cellulosic materials, hydrolysis of, 698B
Cell volume fractions and cell concentrations in fermentation media, 95B
Centrifugation variables, 1153B
Cephalosporin C fermentation process, 277B
Chalara paradoxa amylase, 402B
Characteristic reaction paths, application of, 855A
Chemical and photochemical pretreatment of rice hull, 564B
Chemostat, steady states, 87A
Chlorinated aromatic compounds, pentachlorophenol and, kinetics of microbial growth on, 328A
3-Chlorobenzoate, dehalogenation of, 889A
Chlorophenols, inhibiting action on biodegradation of phenols, 821A
Chloroplast membranes, 764B
Cholesterol oxidation by *Rhodococcus erythropolis*, 655B
Chromatography, radial streaming ion exchange, 326B
Chymotrypsin-trypsin aggregate, 220A
Citric acid, continuous production of, 205B
Citric acid production, fed-batch culture application to, 220B
Cloned fusion protein expression in *Escherichia coli*, 725B
Clostridium acetobutylicum, 843B
—, oscillatory behavior in continuous culture by, 538B
Clostridium formicoaceticum, 797B
Clostridium thermoaceticum, fermentation by, 444B
Coaggregation of trypsin and chymotrypsin, 220A
Coal slurries, 813B
Coimmobilization of enzymes, 220A
Collisions, Brown-like, 786B
Colloidal silica and aliginate (AS gel) for immobilization of whole cells and enzymes, 584B
Computer-aided analysis (CAA) software, 250A
—, for biosensor analysis, 250A
Continuous affinity ultrafiltration for trypsin purification, 516A
Continuous fractionation of human plasma proteins, 841A
Continuous production of maltotetraose, 669B
Continuous-stirred tank biochemical reactor (CSTBR), 198A
—, dynamics of, 198A
Controller design for batch reactors, 519B
Copolymers, water soluble, 400B
Coprinus, alcaliphilic, solid-substrate fermentation of wheat straw with, 414A
Corn starch, fermentation of, to ethanol, 227B
Countercurrent beds, biospecific adsorption in, 616B
Covalent coupling, 400B
CSTR ultrafiltration, enzyme hydrolysis of plasma proteins by, 650A
Cultures, mixed, 130A, 144A
—, effect of pH on growth rate, 130A,
—, growth of two bacterial species, 144A
Curd compression, 1153B
Cybernetic modeling of bacterial cultures at low growth rate, 46B
Cybernetic models, 41A
Cycling, effect on stability of plasmid-bearing microorganisms of, 464A

Dearomatization of lignin derivatives, 507B
Dehalogenation of 3-chlorobenzoate, 889A
Denitrification, simultaneous nitrification and, for removal of nitrogen from wastewaters, 382A
Dextran-NAD$^+$, 363B
D-Glucose, 1104B
Differential contactors for extractive fermentation, 192B
Diffusion coefficient of ferrocyanide, 179A
Diffusion coefficients, effective, in cell immobilization matrices, 714A
Diffusive permeability of nonreacting solute in microbial cell aggregates, 68B
Diffusivity measurements, 1029B
Digestion, anaerobic, 348B
Dissolved oxygen tension, 144A
D-Xylose, 1104B

Effective diffusion coefficients in cell immobilization matrices, 714A
Effects of charged groups of haptens on hapten antibody, 467B
Egg white, 772B, 786B
Electroflocculation, of algae, 345B
Electron transfer by photoacoustic spectroscopy, 64B
Electrophoresis, 903B
Electrophoresis with membrane reactor for aspartic acid production, 647B
Endoglucanases, 160A, 173A
—, from *Trichoderma viride*, 160A, 173A
Endothelial cell culture, 1053B
Enzymatic degradation of cellulose, 215A
Enzymatic hydrolysis, 821B
Enzymatic hydrolysis of municipal-solid-waste components, 278A
Enzymatic hydrolysis of poplars, organosolv pretreatment of, 643A
Enzymatic hydrolysis of starch in a PEG-starch aqueous two-phase system, 979A
Enzymatic hydrolysis of wheat straw, 460B
Enzymatic lysis, 1113B
Enzymatic membrane reactors, performance of, 913A
Enzyme adsorption and hydrolysis of cellulose, 38B
Enzyme control mechanisms for macroscopic measurements in mixed substrate fermentation systems, 311A
Enzyme hydrolysis of plasma proteins, 650A
Enzyme immobilization, 916B
Enzyme membrane reactor, continuous regeneration of ATP in, 130B
Enzyme reaction, initiation-cessation control of, 289B
Enzyme saccharification, 930B
Enzymes and whole cells, immobilization technique of, 584B
Enzyme synthesis rate, 41A
Enzyme systems, immobilized, bond chemistry influence on, 554B
Enzymes, exocellular, 803B
—, periplasmic, 741B
Enzymic cellulose degradation, 203A
—, kinetic models for, 203A
Eschericha coli (*E. coli*), 102A, 313B, 396B, 741B
—, β-galactosidase, immobilization of, 829A
—, cloned fusion protein expression in, 725B
—, growth dynamics of, 102A
—, immobilized recombinant, 396B
Ethanol, 374B, 771B
Ethanol and water adsorption on biomass systems, 880A
Ethanol, fermentation, 271B
Ethanol, fermentation of, by immobilized *Zymomonas mobilis*, 603A
Ethanol, fermentation of corn starch to, 227B
Ethanol (fuel), semicontinuous diffusion fermentation of fodder beets for, 696A
Ethanol, modeling, 271B
Ethanol production, numerical evaluation of HFEF process for, 628B
Ethanol tolerance in Jerusalem artichoke juice, 705A
Ethylene, production of, by *Penicillium digitatum*, 620A
Exocellular enzymes, 803B
Exoglucanases, 160A, 173A
—, from *Trichoderma viride*, 160A, 173A
Extractive fermentation, 135A, 235A
—, of acetone and butanol, 135A
—, differential contactors for, 192B
—, hollow-fiber membrane model, 235A

Fed-batch culture application to citric acid production, 220B
Fed-batch fermentation for production of α-amylase by *Bacillus amyloliquefaciens*, 426A
Fed-batch fermentation, surface-immobilized *Trichoderma* used in, 345A
Fed-batch reactors, optimal control of, 670A
Fe(III) oxides, 1081B
Fermentation, 19A, 189A, 224A, 235A, 797B, 831B
—, antibiotic, 356B
—, batch and fed-batch, surface immobilized *Trichoderma* used in, 345A
—, extractive, differential contactors for, 192B
—, fed-batch, 334B
—, fed-batch, for production of α-amylase by *Bacillus amyloliquefaciens*, 426A
—, hollow-fiber membrane extractive model, 235A
—, homoacetic, 797B
—, of batch beer, 224A
—, of wheat straw, 771B
—, sauerkraut, 189A
—, solid-state, 886B
Fermentation and saccharification of cellulose, thermotolerant yeast strains for, 300A
Fermentation by *Clostridium thermoaceticum*, 444B

Fermentation media, cell volume fractions and cell concentrations in, 95B
—, measurement of, 19A
Fermentation of corn starch to ethanol, 227B
Fermentation of lignocellulose hydrolysates, controlled, 123B
Fermentation (one-fermentor system): influence of changing oxygen concentration on baker's yeast production, 567A
Fermentation parameters, fluorescence sensing of, 55B
Fermentation process, measurement of volumetric oxygen transfer coefficient in, 1006A
Fermentation systems, mixed substrate, macroscopic measurements in, 311A
Fermentation (two-fermentor system): influence of changing oxygen concentration on baker's yeast production, 579A
Fermentor, film, 263B
Fermentors, 189A
—, for sauerkraut fermentation, 189A
Ferrocyanide, 179A
—, diffusion and partition coefficients of, 179A
Ferrous iron, oxidation by *Thiobacillus ferroxidans* of, 295A
Fiber optics for measuring fluorescence sensing of fermentation parameters, 55B
Fiber spacing, 985B
Filamentous fungi, influence of water activity of solid substrate on growth rate and sporogenesis of, 457A
Film fermentor, 263B
Fired bricks, ultraporous, as support for yeast cell immobilization, 470A
Flocculation, of algae, 345B
Fluidized-bed bioreactor, penicillin production in, 569B
Fluorescence sensing of fermentation parameters, 55B
Foam separation of microbial cells, 174B
Fodder beets, semicontinuous diffusion fermentation of, 696A
Formaldehyde production, 1165B
Fractionated polyclonal antibodies for immunoaffinity chromatography, 635A
Free and immobilized *Pichia pastoris* cells, comparison of, 790A
Fungal degradation of cellulose, 215A
Fungi, filamentous, 835B
Furfurals, 50A

Gamma rays, 386B
Gas metering system, automated high sensitivity, for biological processes, 105B
Gas recirculation, 1128B
Gelatin, coated microcarriers, 1037B
Gene expression efficiency for cloned gene product in recombinant cell, 805A
Glucanases, 160A
—, from *Trichoderma viride*, 160A
Glucoamylase, 267A, 910B
—, chemical stabilization of, 267A
—, immobilization of, 759A
Gluconic acid, production by immobilized glucose oxidase reactor of, 553A
Glucose, catalytic oxidation of, gluconic acid production by, 553A
Glucose microprobe, fast responding, 755A
Glucose oxidase, immobilization of, 369B
Glucose oxidase, immobilized, properties of, 245B
Glucose, productivity, 920B
Glucose transport, 374B
Glutaraldehyde activation of hydrophilic gels for immobilized enzymes, 617A
Goethite, 1081B
Gramicidin S synthetase 2, 400B
Growth and sulfide production of *Pyrodictium brockii*, 438B
Growth rate, limitation of, 75A

Hapten antibody, effects of charged groups of haptens on, 467B
Hemicellulosic sugars, *Candida shehatae* for fermentation of, 502A
Hepatitis B surface antigen, 334B
Hepatocytes, rat, 11A
High-sensitivity gas metering system for biological processes, 105B
Hollow fiber extractive fermentor (HFEF), numerical evaluation of, 628B
Hollow-fiber membrane extractive fermentor (HFEF), 235A
—, mathematical model of, 235A
Horse liver alcohol dehydrogenase, catalytic properties and structural features of, 148B
Human erythroid differentiation factor (EDF), 675A
Human plasma proteins, continuous fractionation of, 841A
Hybridoma, 168A
—, in serum-free medium, 168A
Hybridoma cell growth, 1067B
Hybridoma culture, 1015B
Hybridoma culture kinetics, mathematical descriptions of, 491B
Hydrodynamics in pneumatic bioreactor devices, 487A
Hydrogenase, immobilized, 295B
Hydrogenase, production of, 295B
Hydrogen evolution, 396B
Hydrogen sulfide, 408B
Hydrolysis, 910B
Hydrolysis, enzymatic, 341B, 771B, 821B
Hydrolysis of cellulose and enzyme adsorption, 38B
Hydrolysis of cellulosic materials with cellulases, 698B
Hydrolysis of triglycerides by lipase, 512B
Hydrophilic gels, glutaraldehyde activation of, for immobilized enzymes, 617A
Hydrophobic-hydrophilic characters, enzyme support, 916B
Hydrophobicity, substrate, 935B
Hydroxylation of aromatic compounds, 716B
11α-hydroxylation of progesterone by *Aspergillus ochraceus*, 743A
Hysteresis behavior, 24A

IgA (monoclonal antibody), 168A
—, high-density culture method for production of, 168A
Image analysis for morphological measurements on microorganisms, 707B
Immobilization, 764B
Immobilization and kinetics of lactate dehydrogenase, 213B
Immobilization of carbonic anyhydrase, 796A
Immobilization of *E. coli* β-galactosidase, 829A
Immobilization of enzymes, glutaraldehyde activation of hydrophilic gels for, 617A
Immobilization of proteins on polymer beads, 689B
Immobilization reactions of catalase and amyloglucosidase, 730A
Immobilization technique of whole cells and enzymes, 584B
Immobilized biomass biosorption, batch reactor mass transfer kinetic model for, 545B
Immobilized enzyme systems, bond chemistry influence on, 554B
Immobilized glucose oxidase properties, 245B
Immobilized glucose oxidase reactor, gluconic acid production by, 553A
Immobilized L-aspartate β-decarboxylase reactor system, 184B
Immobilized subtilism, limited modifications of soya proteins by, 475B
Immunoaffinity chromatography, fractionated polyclonal antibodies for, 635A
Indole alkaloids from *Catharanthus roseus*, 905A
Inhibiting action of chlorophenols on biodegradation of phenol, 821A
Inhibitor concentration, Monod kinetics for, 430B
Inhibitory substrate rate, 198A
—, applied to dynamics of CSTBR, 198A
Insulin, retention of, in alginate gel beads, 607A
Intracellular proteins, 1113B
Intraparticle diffusion in ethanol fermentation by immobilized *Zymomonas mobilis*, 603A
Invertase immobilized on PEVA hollow fiber membrane, 664B

Jerusalem artichoke juice, improvement in ethanol tolerance of, 705A

Killer toxin cDNA in cultures of *Saccharomyces cerevisiae*, 783A
Kinetic analysis, 33A
Kinetic effects of simultaneous inhibition by substrate and product, 718A
Kinetic model analysis, 866B
Kinetic model of enzymatic lysis and disruption of yeast cells, 929A
Kinetic models, 203A
—, for enzymic cellulose degradation, 203A
Kinetics and immobilization of lactate dehydrogenase, 213B
Kinetics, biofilm, 379B
KLA, 1128B
Klebsiella pneumoniae, effect of wood-derived inhibitors on 2,3-butanediol production by, 624A
Kluyveromyces fragilis in Jerusalem artichoke juice, ethanol tolerance in, 705A
Kraft pulp bleaching with xylanase, 235B

Lactate, 797B
Lactate dehydrogenase, kinetics and immobilization of, 213B
Lactic acid production, 183A
—, by coimmobilized mixed culture system, 183A
Lactose, methane generation from, 28B
Large-scale production of human erythroid differentiation factor, 675A
Leachate, 257A
—, treatment of, 257A
L-Glutamic acid, 363B
Lignin, 897B
Lignin derivatives, dearomatization of, 507B
Lignocellulose, 50A, 62A
Lignocellulose hydrolysates, controlling fermentation of, 123B
Lignocelluloses, 897B
Lignocellulosic biomass, 341B
Lipase-catalyzed oil hydrolysis, 628A
Lipase-catalyzed reactions, 208A
—, between sugar alcohols and vegetable oils, 208A
Lipase, hydrolysis of beef tallow from, using *Pseudomonas* sp., 349A
Lipase, hydrolysis of triglycerides by, 512B
Liposomes, 826B
Liquid emulsion membrane for separation and concentration of amino acids, 604B
Liquid membrane bilayers generated by bacteriorhodopsin, photo-osmosis through, 511A
Low-growth-rate behavior of bacterial cultures, cybernetic model of, 46B
L-phenylpyruvate, repeated batch production of, 834A
Lumping analysis of biochemical reaction systems, 869A
Lysozyme, 772B
Lytic system, 1113B

Macroscopic measurements in mixed substrate fermentation systems, 311A
Maltotetraose, continuous production of, 669B
Mammalian cells, 1037B, 1053B, 1061B, 1067B, 1073B
Mass transfer, 1128B
Mathematical descriptions of hybridoma culture kinetics, 491B
Mathematical model of affinity ultrafiltration process, 451B
Mechanically agitated aerated vessels, volumetric mass transfer coefficient in, 482B
Mechanistic model of kinetics of enzymatic lysis and disruption of yeast cells, 929A
Membrane reactor with electrophoresis for aspartic acid production, 647B
Metabolic pathway stoichiometry in statistical analysis of bioreactor measurement data, 713B
Metabolic pathway synthesis (MPS), software system for, 587A
Metal adsorption, 282A
—, by *R. arrhizus* biomass, 282A
Methane fermentation, 50A, 62A
Methane generation from lactose, 28B
Methanol, 44A
Methanol oxidase activity, molecular regulation of, 577B
Methanol yeast, 1165B
Methylotrophic bacterium, 125A
—, β-lactamase formation in, 125A
Methylotrophic yeast, 44A
Microalgae production in a flume, 140B
Microalgae, production of, 873B
Microbial biomass protein, 408B
Microbial cell aggregates, diffusive permeability of a nonreacting solute in, 68B
Microbial cells, foam separation of, 174B
Microbial cultures for methane generation from lactose, 28B
Microbial flocs, 91A
Microbial growth, biochemical limits to, 86B

Microbial polysaccharide biosynthesis, batch kinetics of, 639B
Microbial technology, 117A
—, tryptophan operan model, 117A
Microcarrier concentration, in animal cell culture, 975B
Microencapsulation, in a bioreactor, 363B
Microfibrils from cellulase of *Trichoderma reesei*, 321A
Microorganisms, 313B
Microorganisms, plasmid-bearing, effect of cycling on stability of, 464A
Microscopic membranes, protein precipitate recovery using, 984A
Mixed culture growth of two bacterial species, 144A
Mixed substrate fermentation systems, macroscopic measurements in, 311A
Model, 144A
—, for mixed culture growth of two bacterial populations, 144A
Modeling, 277B
Modeling, ethanol, 271B
Models, 102A
—, three-pool growth model of *E. coli*, 102A
Models, 117A
—, tryptophan operan, 117A
Models, segregated model of recombinant multicopy plasmid propagation, 304A
Molasses wastewater, 1A
Molasses wastewater, sulfate-rich, anaerobic digestion of, 885A
Molecular regulation of methanol oxidase activity, 577B
Monoclonal antibodies, 168A
—, high-density culture method for production of, 168A
Monoclonal antibodies, 993B
Monoclonal antibody, production of, 1015B
Monocylic enzyme system as a biochemical switching device, 527B
Monod-Haldane equation, 1097B
Monod kinetics for substrate, product and cell inhibition, 430B
Monosaccharide, 50A
Morphological measurements on microorganisms, image analysis for, 707B
Mouse cell, microcarrier culture, 1073B
Mouse-human hybridoma, 168A
—, in serum-free medium, 168A
M-OXA β-lactamase biosynthesis, 125A
Multicopy plasmid propagation, recombinant, segregated model of, 304A
Municipal-solid-waste (MSW) components, 278A
—, enzymatic hydrolysis of, 278A
Mycelium growth, 835B

Native wheat starch, action of *Bacillus subtilis*, α-amylase on, 895A
Nitrogen influence on alcoholic fermentation, 747A
Nitrogen removal from wastewaters by simultaneous nitrification and denitrification under oxygen gradient, 382A
Non-Newtonian liquids, 301B
NTA, 1081B
Nuclear magnetic resonance spectrometer, 966B
Nuclear magnetic resonance spectroscopy, 1138B
Nuclease enzymes for aid in nucleic acid contaminant removal during protein isolation, 100B
Nucleic acid contaminants, removal during protein isolation of, 100B
Nutrient, 75A

Oil hydrolysis, lipase-catalyzed, 628A
On-line pH measurements, problematics and stability of, 659A
Onopordum nervosum, 341B
Optimal control of fed-batch reactors, 670A
Optimal temperature control of batch beer, fermentation, 224A
Optimization, 277B
Organic wastes, biomethanation of, 521A
Organosolv pretreatment for enzymatic hydrolysis of poplars, 643A
Oscillating continuous cultures of budding yeast, 411B
Oscillatory behavior by *Clostridium acetobutylicum* in continuous culture, 538B
Oxidation of ferrous iron by *Thiobacillus ferroxidans*, 295A
Oxydoreductases, 916B
Oxygen accumulation, mixing, and carbon utilization, photobioreactor designed for, 336A
Oxygen concentration, changing, influence on baker's yeast production of (one-fermentor system), 567A
Oxygen concentration, changing, influence on baker's yeast production of (two-fermentor system), 579A
Oxygen diffusion coefficients, 313B
Oxygen diffusion coefficients and solubilities, simultaneous measurements of, 995A
Oxygen diffusion coefficients, measurement with polarographic oxygen electrodes of, 1010A
Oxygen diffusion in aqueous xanthan solutions, 8B
Oxygen transfer, 966B
Oxygen transfer in pneumatic bioreactor devices, 487A

Pachysolen tannophilus, 1104B
Packed-bed reactor (PBR) for anaerobic wastewater treatment, 159B
Partition coefficient of ferrocyanide, 179A
Penicillin production in a fluidized-bed bioreactor, 569B
Penicillium capsulatum, hydrolysis of beet pulp polysaccharides by, 433A
Penicillium chrysogenum, 313B
Penicillium chrysogenum, effect of carbon dioxide on, 1B
Penicillium digitatum, production of ethylene by, 620A
Pentachlorophenol, chlorinated aromatic compounds and, kinetics of microbial growth on, 328A
Peptide synthesis, 866B
Peracetic acid pretreatment for increased digestibility of cedar, 802A
Periplasmic enzymes, 741B
PH, 130A
—, effect on growth rate of mixed cultures, 130A
Phenol, 1097B
pH measurements, problematics and stability of, 659A
Phosphofructakinase in yeast fermentation, rate-limiting capability of, 855A
Photoacoustic spectroscopy, electron transfer by, 64B
Photobioreactors for mixing, carbon utilization and oxygen accumulation, 336A
Photochemical pretreatment of cellulose, 215A
Photochemical pretreatment of rice hull, 564B
Photo-osmosis through liquid membrane bilayers generated by bacteriorhodopsin, 511A
Pichia pastoris, 44A
Pichia pastoris cells, free and immobilized, comparison of, 790A
Pinus radiata, steam-exploded, fiber porosity-cellulose digestibility relationship in, 447A
Plant cells, entrapped, 891B
Plant cell tissue cultures, secondary metabolite production from, 905A
Plant products, selective adsorption of, 922A
Plasma, low-temperature, 369B
Plasma proteins, enzyme hydrolysis of, 650A
Plasmid-bearing microorganisms, effect of cycling on stability of, 464A
Plasmid-containing killer toxin cDNA in cultures of *Saccharomyces cerevisiae*, 783A
Plasmid instability kinetics, 733B
Plasmid propagation, recombinant multicopy, segregated model of, 304A
Pneumatic bioreactors, hydrodynamics and oxygen transfer in, 487A
Polarographic oxygen electrodes for measuring oxygen diffusion coefficients, 1010A
Polarographic oxygen electrodes, simultaneous measurements of oxygen diffusion coefficients and solubilities with, 995A
Polyacrylic acid, 772B
Polyclonal antibodies, fractionated, for immunoaffinity chromatography, 635A
Polyelectrolyte complex, 756B
Polyelectrolyte precipitation, 772B, 786B
Poly(ethylene-co-vinyl alcohol) hollow fiber membrane, invertase immobilized on, 664B
Polymer lattices, thermolysin immobilized on, pressure effects on catalysis by, 507A
Polymer membranes, 369B
Polymer resins, porous, binding of proteins to, 547A
Poly(styrene) microcapsules, 289B
Polytetrafluoroethylene (PTFE), 263B
Pontryagin's maximum, 277B
Poplars, enzymatic hydrolysis of, organosolv pretreatment of, 643A
Pressure-temperature relationships in bacterial growth and productivity, bioreactor for study of, 407A
Proteases, 866B
Protein enrichment, 886B
Protein enrichment of sugar beet pulp, pilot reactor for, 476A
Protein feed production, semicontinuous diffusion fermentation of fodder beets for, 696A
Protein isolation, removal of nucleic acid contaminants during, 100B
Protein, microbial biomass, 408B
Protein precipitate recovery using microscopic membranes, 984A
Protein production from sugar-beet pulp, 255B
Proteins, immobilization on polymer beads of, 689B
Protein solubilization during barley mashing with neutral proteinase, 18B
Proteins, porous polymer resins bound to, restricted diffusion effect on, 547A
Proton concentrations, 843B
Proton extrusion, 374B
Pseudomonas putida, 1097B
Pseudomonas sp. 200, 1081B
Pseudomonas sp. B13 cells for dehalogenation of 3-chlorobenzoate, 889A
Pseudomonas sp., hydrolysis of beef tallow by lipase from, 349A
Pullulanase, modified, thermal stabilization of, 249B
Pyrite, 813B
Pyrites, selective adsorption of *Thiobacillus ferroxidans* to dislocation sites on, 378A
Pyrodictium brockii, growth and sulfide production of, 438B

Raisin extract industrial-scale alcoholic fermentation, 666A
Rat hepatocytes, 11A
Reaction paths, characteristic, application of, 855A
Reaction paths of biochemical systems, 847A
Reactor, multistage, 271B
Recombinant fermentation, gene expression efficiency for cloned gene product in development of, 805A
Recombinant microbial populations, transient response simulations of, 418B
Repeated batch production of L-phenylpyruvate, 834A
Reservoir water, 345B
Response simulations of recombinant microbial population, 418B
REV, 826B
Reversible immobilization of soybean β-amylase, 711A
Rhizopus arrhizus, 282A
—, cation competition effect on metal adsorption by, 282A
Rhodococcus erythropolis, cholesterol oxidation by, 655B
Rice hull, chemical and photochemical pretreatment of, 564B
RNA extraction, 927B
Rotating-disk electrode, 179A
—, for measuring diffusion and partition coefficients of ferrocyanide, 179A
Rumen-derived anaerobic digestion (RUDAD) of domestic refuse, 719B
Rumen-derived anaerobic digestion (RUDAD) process, 418A
Rumen microorganisms, 749B

Saccharification, 930B
Saccharification and fermentation of cellulose, thermotolerant yeast strains for, 300A
Saccharification, of lignocelluloses, 897B
Saccharomyces cerevisiae, 313B, 334B, 374B, 733B, 831B, 1104B, 1138B
—, plasmid-containing killer toxin cDNA in cultures of, 783A
—, relationship between growth, fermentation, and respiration rates in, 240B
Salt environment, 764B
Sampling system, 923B
Sauerkraut fermentation, 189A
Scaleup study, 326B
Scenedesmus obliquus, semicontinuous cultures of, improved performance by biomass recirculation of, 397A

Selective adsorption of plant products, 922A
Semicontinuous diffusion fermentation of fodder beets, 696A
Separation and concentration of amino acids, 604B
Sludge, activated, 71A
Software systems, for metabolic pathway synthesis (MPS), 587A
Solid-state fermentation for protein production from sugar-beet pulp, 255B
Solid-substrate fermentation (SSF) of wheat straw with alcaliphilic *Coprinus*, 414A
Solventogenesis, 843B
Soya proteins, limited modifications of, 475B
Soybean β-amylase, reversible immobilization of, 711A
Spectrometer, nuclear magnetic, 966B
Spiral-wound bioreactors, production of aspartic acid and alanine using, 390A
Sporotrichum cellulophilum, 386B
Stabilization of glucoamylase against thermal inactivation, 267A
Starch, enzymatic hydrolysis of, in a PEG-starch aqueous two-phase system, 979A
Starch granules, 910B
Starch, production of alcohol from, 831B
Steady-state biofilm kinetics, 379B
Steam explosion of *Pinus radiata*, fiber porosity-cellulose digestibility relationship in, 447A
Streptococcus lactis, 183A
—, in mixed culture lactic acid production, 183A
Streptomyces griseus, 356B
Substrate concentrations, 144A
Substrate hydrophobicity, 935B
Substrate limitations, 91A
Substrates, water activity of, influence on growth rate and sporogenesis of filamentous fungi, 457A
Sucrose, 891B
Sugar alcohols, 208A
—, biosurfactant production from, 208A
Sugar-beet pulp for protein production, 255B
Sugar beet pulp, protein enrichment of, pilot reactor for, 476A
Sugar mixtures, *Candida shehatae* for fermentation of, 502A
Sugar phosphate concentrations, 1138B
Sulfate-rich molasses wastewater, anaerobic digestion of, 885A
Sulfide ore, bacterial leaching of, 110B
Sulfide production and growth of *Pyrodictium brockii*, 438B
Sulfolobus acidocaldarius, effect of hyperbaric oxygen and carbon dioxide on growth of, 750A
Synergism, 173A
—, in cellulose hydrolysis, 173A
Synthesis of aspartame precursor, 595B

Tannins, 939B
Thermal stabilization of modified pullulanase, 249B
Thermodynamic model, 1158B
Thermolysin immobilized on polymer lattices, pressure effects on catalysis by, 507A
Thermophilic archaebacteria, effect of hyperbaric oxygen and carbon dioxide on growth of, 750A
Thermotolerant yeast strains, selection of, for simultaneous saccharification and fermentation of cellulose, 300A
Thiobacillus ferrooxidans and *Thiobacillus thiooxidans* for leaching of sulfide ore, 110B
Thiobacillus ferroxidans, ferrous iron oxidation by, 295A
—, selective adsorption of, to dislocation sites on pyrite surfaces, 378A
Three-phase biofilm fluidized sand reactor for aerobic wastewater treatment, 677B
Three-pool growth model of *E. coli*, 102A
Thylakoid membranes, monitoring electron transfer by photoacoustic spectroscopy in, 64B
Thylakoids, 764B
Toxic wastes, biomethanation of, 521A
Trichoderma harzianum E58, production of cellulase enzymes by, 725A
Trichoderma reesei, 341B, 760B, 821B, 903B, 920B
—, microfibrils generated from, 321A
Trichoderma reesei cellulase, 853B
Trichoderma, surface-immobilized, used in batch and fed-batch fermentation, 345A
Trichoderma viride, 160A, 173A
—, endoglucanases and exoglucanases from, 173A
—, specific and nonspecific glucanases from, 160A
Trichosporon pullulans cells, 391B
Triglycerides, hydrolysis by lipase of, 512B
Trypsin-chymotrypsin aggregate, 220A
Trypsin, purification of, water-soluble affinity polymer for, 439A
—, purification of, continuous affinity ultrafiltration process for, 516A
Tryptophan operan, 117A
Two-stage anaerobic degradation of cellulose, 418A
Two-stage anaerobic filter, 257A
—, for leachate treatment, 257A

Ultrafiltration, antifoam effects on, 385A
Ultrafiltration, continuous affinity, for trypsin purification, 516A
Ultraporous fired bricks as support for yeast cell immobilization, 470A
Ultrasound-enhanced bioprocesses, 655B

Vacuum filtration, 71A
Vegetable oils, 208A
—, biosurfactant production from, 208A
Viscous mycelial fermentations, improved performance in, 737A
Volumetric mass transfer coefficient in mechanically agitated aerated vessels, 482B
Volumetric oxygen transfer coefficient in aerobic fermentation processes, improved method for determination of, 1006A

Waste biomethanation systems, anion-exchange substrate shuttle process for, 521A
Wastes, municipal, 930B
Wastewater, anaerobic acidogenesis of: influence of operational parameters on reactor performance, 958A
—, anaerobic acidogenesis of: kinetics of growth, inhibition, and product formation, 969A
—, molasses, 1A
Wastewaters, removal of nitrogen from, by simultaneous nitrification and denitrification, 382A
Water and ethanol adsorption on biomass systems, 880A
Water-soluble affinity polymer for trypsin purification, 439A
Wheat, native starch granules from, action of *Bacillus subtilis* α-amylase on, 895A
Wheat straw, 771B
—, enzymatic hydrolysis of, 460B

Xanthan solutions, aqueous, anomaly of oxygen diffusion in, 8B
Xylanase, bleaching of hardwood kraft pulp with, 235B
Xylanase, production of, by *Aspergillus ochraceus*, 613A
Xylanase secretion, 821B

Yeast, 1113B
Yeast, budding, oscillating continuous cultures of, 411B
Yeast cell immobilization, ultraporous fired bricks as support for, 470A
Yeast cell lysis by microbial cell lytic enzymes, mechanistic model of, 929A
Yeast, RNA extraction from, 927B
Yeast (S288C pUCKm8 [cir$^+$], 733B
Yeast strains, thermotolerant, for simultaneous saccharification and fermentation of cellulose, 300A
Yohimbine, 891B

Zymomonas mobilis, acid production of, 770A
—, intraparticle diffusion in ethanol fermentation by, 603A